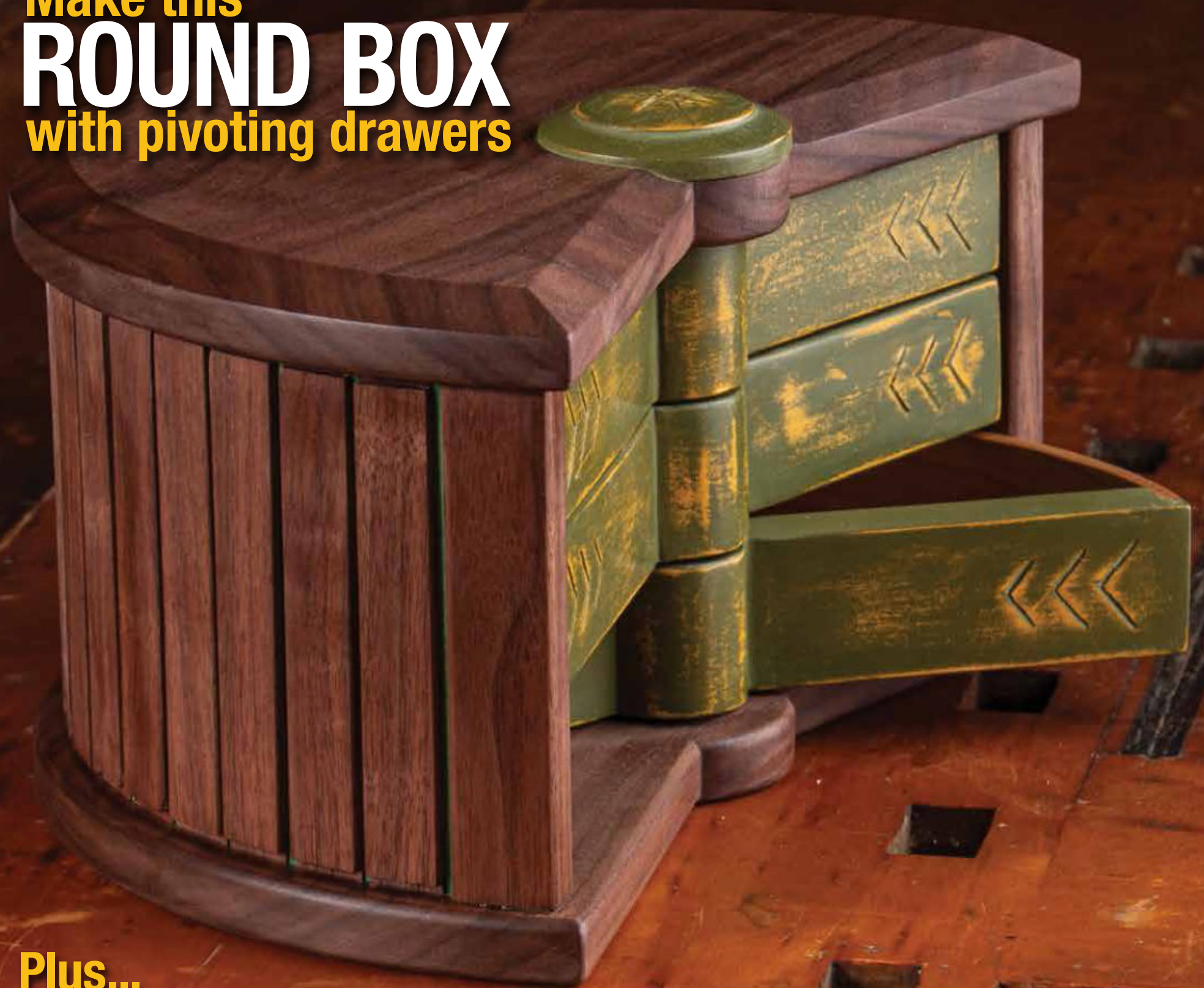


Milk Paint Made Easy p.26

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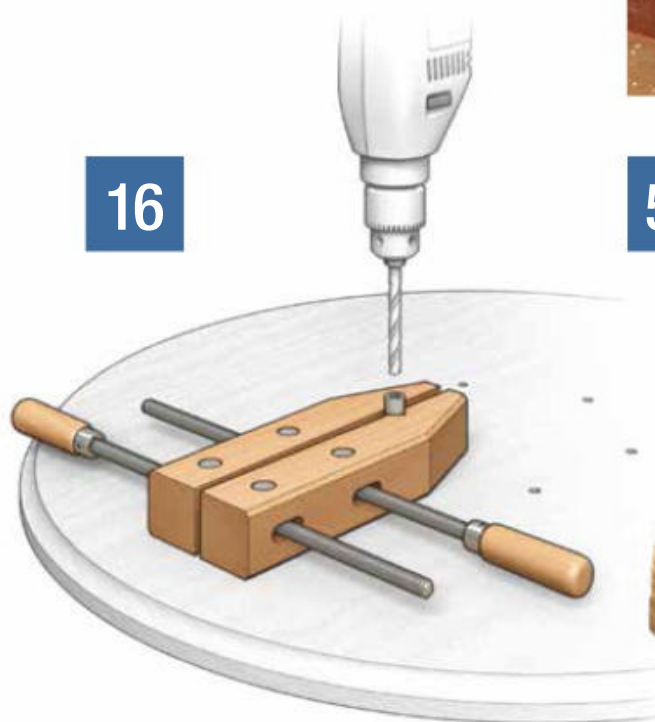
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Grateful for woodworking

When I wake up in the morning, before my brain begins its daylong deluge of to-dos and worries, I try to bring to mind at least three things for which I'm grateful. The list varies from day to day and could include simple ideas such as appreciating a good night's sleep or looking forward to a tasty breakfast. Or perhaps sentiments as straightforward as being grateful for friends and family. And sometimes, I express existential gratitude: "I'm grateful that I woke up today." But due to its numerous attributes worthy of gratefulness, one item that often makes my morning list is woodworking.

We woodworkers have a lot to be grateful for. Inherent in our craft are traits of good character, such as patience and humility. It teaches us problem-solving and reveals an understanding of how things go together, lessons applicable to all aspects of life. At the end of a productive day in the shop, woodworking delivers pride in work. The craft also offers solitude when we need to focus and a strong sense of community when we crave connection. And we're brought closer together still when what we make is appreciated by others. All gratitude-worthy.

Woodworking also helps us savor many other flavors of life. For instance, feel grateful for the great outdoors as you relax on the Arts & Crafts style bench (p. 40) or the camping stool (p. 22) through which you can practice traditional woodworking techniques and learn to work leather. Enjoy turning and then playing the no-batteries-required ball and cup game on page 48. Value the versatility of milk paint (p. 26) while adding to your finishing repertoire. And appreciate the appreciation you're sure to receive when you gift the handsome round jewelry box on page 32.

It doesn't matter so much what time of day we do it, my morning routine aside, but that we take the time to do it—to count what we have and not what we lack. One more thing to add to my blessings tally today: I'm grateful that you're sharing your time with *Woodcraft Magazine*. We're glad you're here. Let's build. ■



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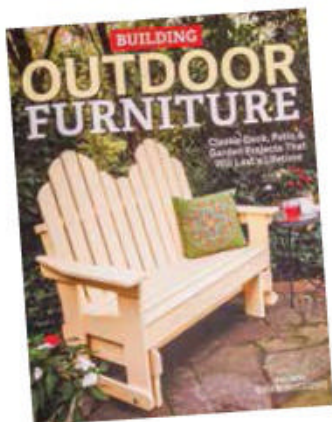
Designing women

What a pleasant surprise it was to see not just one but two projects by female woodworkers in the April/May issue! Both projects are beautiful (as most that you print are), but in the traditionally male-dominated field of woodworking, it's inspiring to see more women engaged in the craft, and to see the magazine appreciate and highlight their talents. Thank you for including these projects and making women feel included and welcomed in the workshop and your pages.

—Karen Salvatore, Moline, IL

Turning Hollywood

In preparation for an upcoming role, actress Jennifer Garner recently took to the lathe under the watchful eye of furniture-maker Aaron Hauser. Garner, who will play a woodturner in the small-screen adaptation of *New York Times* bestseller *The Last Thing He Told Me*, posted a video on her social media showing the actress turning a bowl she ultimately gave to her friend and the show's producer, Reese Witherspoon. The limited series will stream on the AppleTV+ platform.



Buy the book

Cedar Lane Press recently released *Building Outdoor Furniture*, a compendium of outdoor projects from the pages of *Woodcraft Magazine*. The collection includes

detailed plans and photos to guide woodworkers of all skill levels in building outdoor furniture such as benches, tables, and Adirondack chairs. The book is available from Cedar Lane Press and Woodcraft, and retails for \$27.95.

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New school

Paul Sacaridiz, who served as the Executive Director of the Haystack Mountain School of Crafts in Maine, has been appointed Director of Cranbrook Academy of Art in Michigan.

An accomplished sculptor and ceramicist, Sacaridiz's career includes 25 years experience in art making, teaching, administration, and higher education and nonprofit leadership. In more than six years at Haystack, Sacaridiz grew the school's endowment and annual fund, and added 50 new fellowships. Sacaridiz's tenure at Cranbrook begins this May. He takes over for COO Rod Spearin, who served as Interim Director of the Academy since Susan R. Ewing retired from the position in July 2021.

Lost and found

Author and publisher Christopher Schwarz announced that Lost Art Press has hired Megan Fitzpatrick as the book publisher's new editor. The hiring makes Fitzpatrick Lost Art's first full-time employee. With a catalogue of more than 50 titles, Lost Art Press ships more than 60,000 books a year, in addition to tools and apparel. Schwarz and Fitzpatrick worked together previously at *Popular Woodworking*.

Loss to turning world

Renowned Canadian turner Stephen Hogbin passed away in January at the age of 79. Born in England, Hogbin studied woodworking at Rycotewood College and industrial design at Royal College of Art before moving to Canada in 1968 to teach at Sheridan College School of Design. Hogbin's award-winning and influential woodturnings feature cut-apart, re-assembled, and hand-carved elements.

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ROBERT SHERRIFF,
NORWALK, CT

High as a meow-ntain. Woodworker and cat aficionado Sherriff built this stylish stand for his three Maine Coons, Kiki, Fat Boi, and Slim. The cylinders are kerf-bent birch plywood. After bending each side around a plywood disc, Sherriff used construction adhesive to hold it in place and fill the kerfs. He liked the look so much he decided not to veneer the inside surfaces. After building the two 17" diameter beds, he attached them with solid maple strips for a 36" overall height. We're sure the cats appreciate Sherriff's hard work.



DONALD LEMMA,
GLADSTONE, NJ

Keep the change. When hobbyist woodworker Lemma wanted to store his collection of more than 100 U.S. Morgan Silver Dollars, he designed and built this slick display. The case and drawers are constructed of padauk and finished with Danish oil and shellac. Lemma used a shop-made drill press jig to locate and bore 25 coin holders in each drawer. First he bored through the shelf with a Forstner bit slightly smaller than the coin, before cutting a concentric partial-depth hole with a coin-sized bit. This created a shelf for each coin to sit on where both sides of the coin are visible.

BRIAN TANDROW,
BOISE, ID

We see your drawers. In need of a new dresser for his primary bedroom, Tandrow blended several designs to create this three-drawer version. The chest measures 38 x 36 x 21" and is made of ash. Tandrow finished the piece with Odie's wood butter and added some brass knobs. Most importantly, he says his wife likes it.



JASON CROOKS,
TEMPLE, TX

Zebra of a Different Color. After more than two decades woodworking, Crooks took up the scroll saw three years ago and hasn't put it down since. For this painted zebra, he covered the surface of his plywood substrate with packing tape before adhering his pattern with spray adhesive. He cut away the black "negative" spaces then painted the remaining stripes with neon acrylic paints. He finished by backing the cutout with a piece of black-painted plywood. ■



Show off your work!



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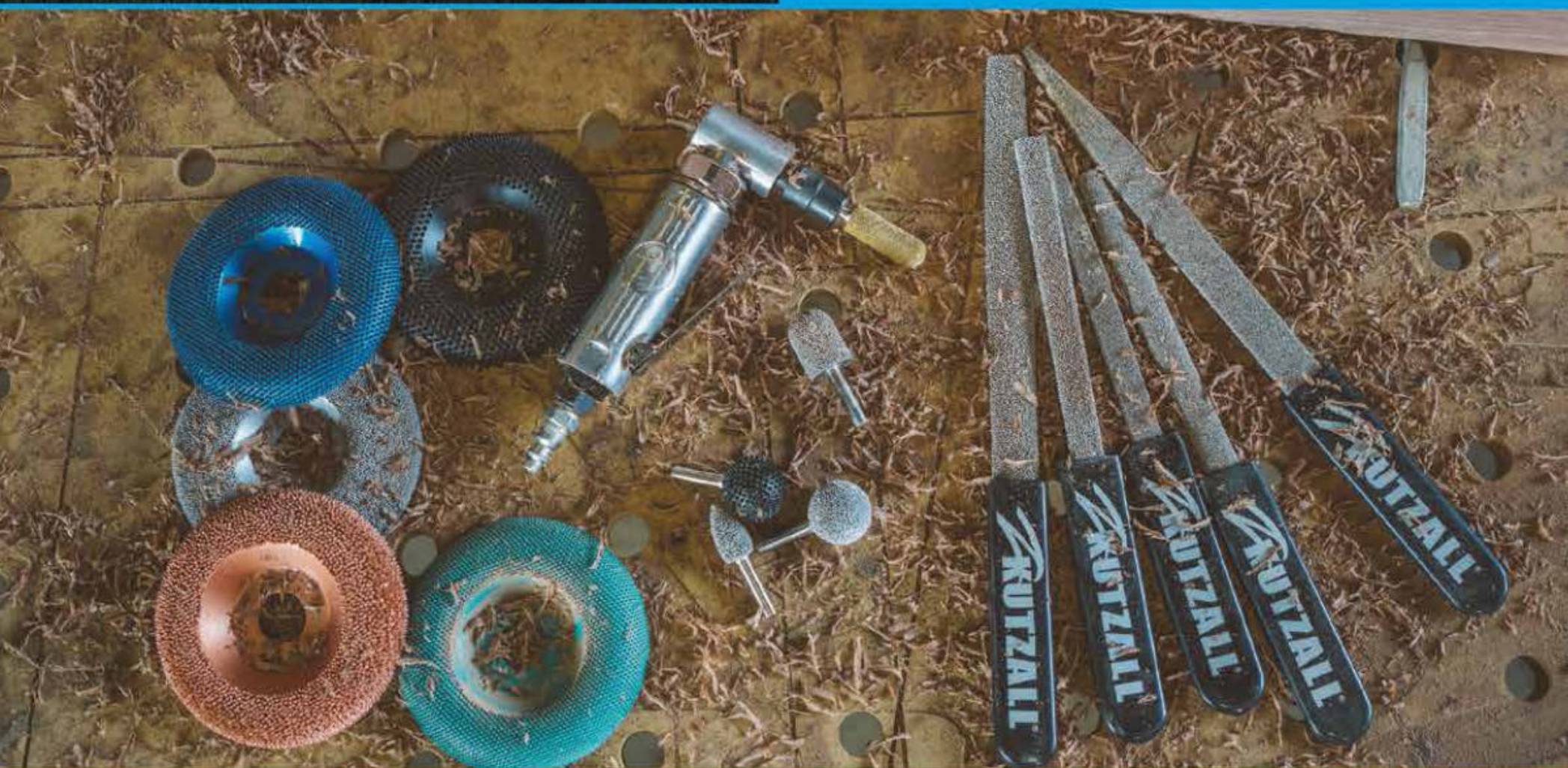
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A little lathe big on charm

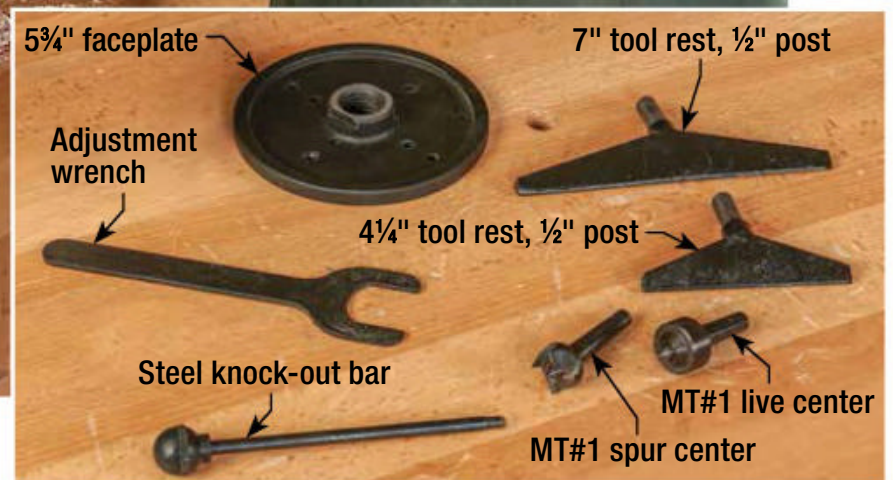
King Industrial KWL-813VS

Overview

- 8" swing over bed, 5¼" over banjo
- 13" between centers
- 1" × 8 TPI spindle
- ⅜" spindle bore
- #1 Morse taper
- 1⅞" tailstock travel
- 750-3200 RPM variable speed range



King Industrial KWL-813VS kingcanada.com, \$315



King Canada has introduced the KWL-813VS, a pen lathe from King Industrial, for entry-level turners. It comes with the standard equipment you'd expect to find with most mini lathes—live and spur centers, knockout bar, faceplate, tool rest—and other usual features, such as cast-iron construction and an on/off switch with a safety key. It's a good-looking, well-made machine with enough power for small turnings. I was curious to find out what this mini mini-lathe could do.

This tool is noticeably tiny, but it doesn't look or feel cheap. The cast-iron bedway, headstock, and tailstock give the machine a stout appearance and some heft. Handsome chrome-plated knurled hand wheels operate smoothly and are easy to grip. The tool rest and quill lock handles tighten well, but the ball ends tend to work themselves loose while the lathe is running. Nothing a little Loctite

wouldn't fix. As for capability, the tailstock quill doesn't have much travel (1⅞"), but you don't need much with such a short capacity. The distance between its well-aligned MT#1 live and spur centers is 13", which is roomy enough for pens and most turning kits. Its 1/3 HP motor and variable speed range from 750 up to 3200 RPM can handle just such work.

The KWL-813VS can handle other small turning projects, such as short spindles, shallow platters, bowls, vases, and boxes. It can even accommodate small off-center turnings. While testing, I turned a few poplar spoons at between-center capacity and found the unit to run quietly and without much vibration. But the diminutive unit began budging backward while digging into a cut. Placing a non-slip mat underneath solved that problem. Then I mounted an 8"-diameter, 3" thick ash bowl blank, maxing out

swing and tool rest capacity. The machine spun it without protest but stalled at the resistance from a gouge, lacking the torque necessary for a blank that size. Nevertheless, the lathe plays nice with smaller diameter bowls and platters starting at around 6". And with the vast world of turning kits, and designs for vases and ornaments, you'll be hard-pressed to run out of things to make with this machine.

Experienced turners could consider this lathe for a dedicated buffing system. Or a woodworker who wants to augment their furniture making by turning drawer pulls or decorative finials can do so without breaking the bank or losing valuable shop space. But this unit was designed with the novice in mind—low initial cost with some room to grow. If you're a beginner or know a young future turner, the KWL-138VS deserves a thoughtful look. ■

—Tester, **Chad McClung**



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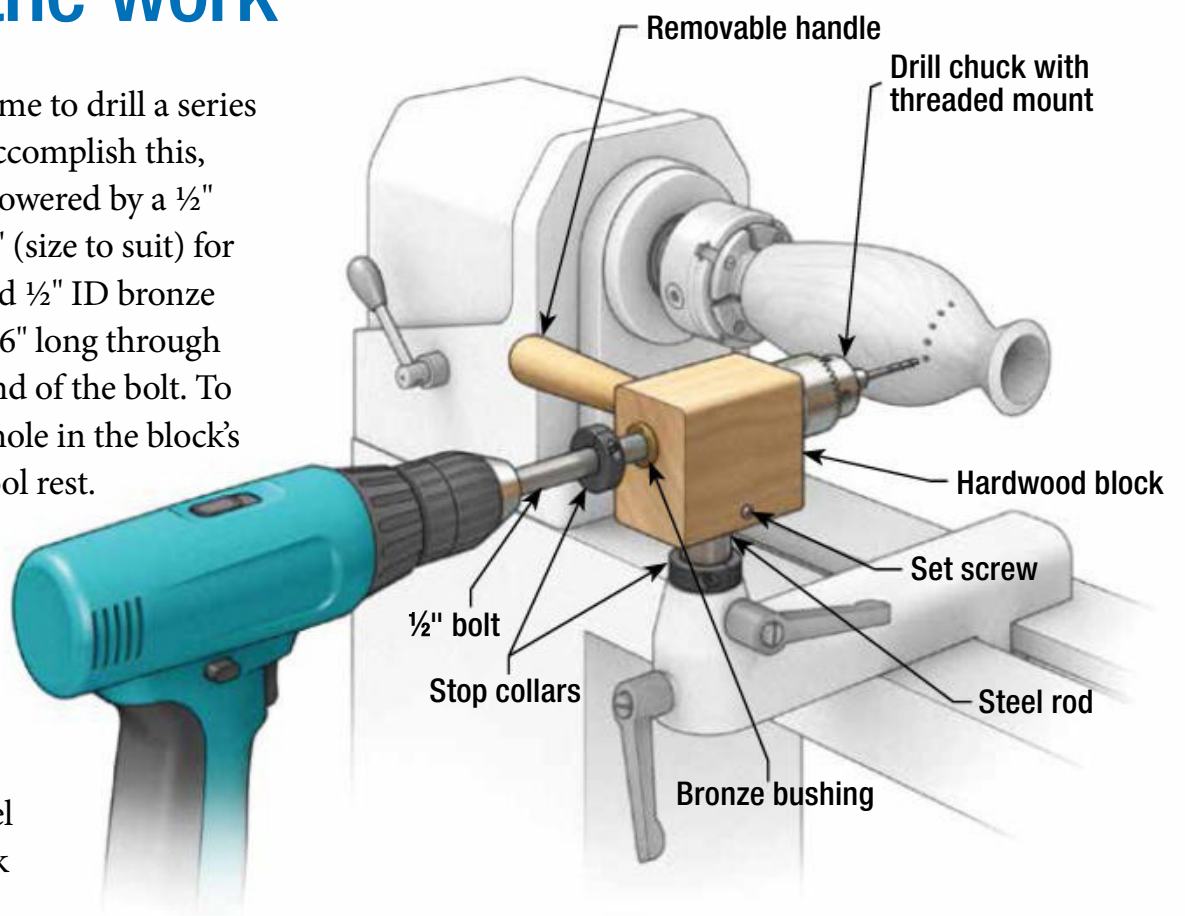
TOP TIP

Horizontal drill for lathe work

I recently completed a lathe project that required me to drill a series of equally-spaced holes around a small vase. To accomplish this, I made a banjo-mounted, horizontal drilling jig powered by a ½" handheld drill. I used 8/4 hard maple about 3 × 3" (size to suit) for the jig body and drilled a hole through it. I pressed ½" ID bronze bushings into each end of the hole, slid a ½" bolt, 6" long through the bushings, and threaded a drill chuck on the end of the bolt. To mount the block on my banjo, I drilled a second hole in the block's underside the same size as the post hole for the tool rest.

Then I slid a matching steel rod into the hole, locking it with a setscrew. After sliding a stop collar onto this rod, I adjusted the height of the chuck to align its central axis to that of the lathe and tightened the stop collar. To control the hole depth, I mounted another stop collar on the handheld drill end of the bolt. A ⅞"-dia. dowel press-fit into a hole drilled in one face of the block serves as a removable handle and adds stability.

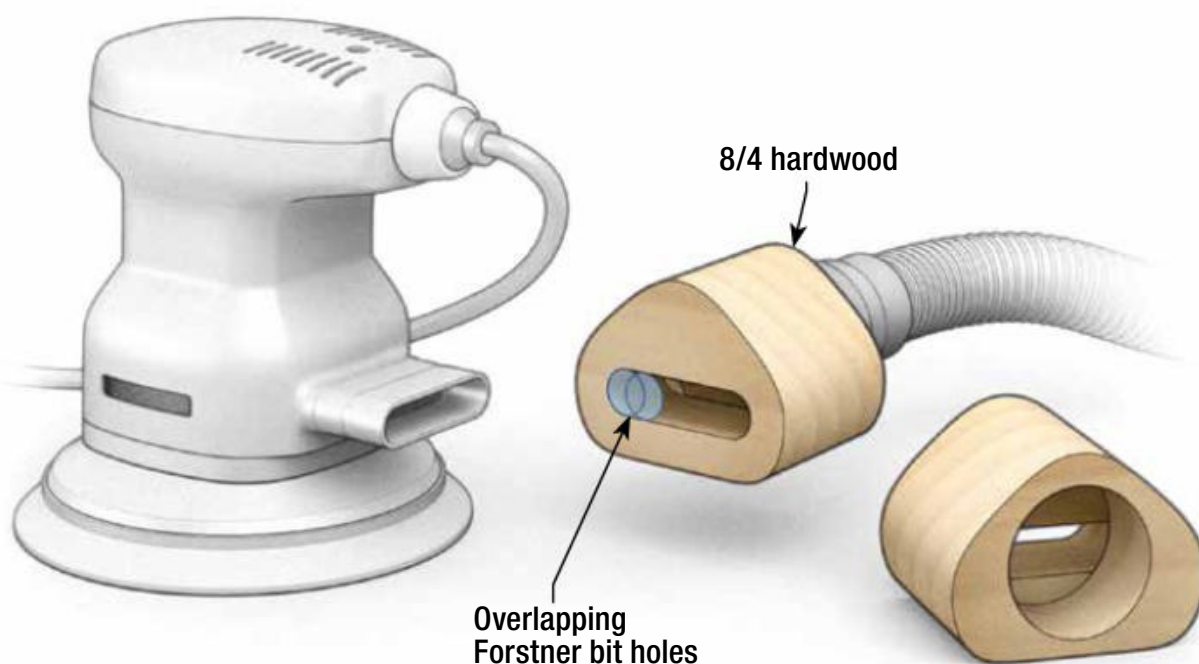
—Jeff Peters,
Redgranite, Wisconsin



Dust hose adapter

I managed to lose the shop vacuum adaptor that I used with my random orbit sander. Rather than turning my shop upside down to find it or buy a replacement, I made my own from a piece of 8/4 stock. I drilled a series of ⅞" holes into one side to fit the tool's dust port. For the vacuum hose, I drilled a 1½" hole into the opposite end. A few bandsaw cuts helped contour the piece to a less bulky shape. I'm pleased to report my shop-made version stays connected at least as well as the original.

—Steve McCoy,
Werleys Corner, PA



Restoring aluminum tables

If you should happen to cut a little too deep on your CNC machine and scar the aluminum table, don't despair. Most of these tables are made up of narrow, two-sided extrusions. To hide the damage, loosen the holding bolts and flip the extrusion over before retightening everything. Then double-check your cutting files before it happens again.

—Bob Berner,
Allentown, PA



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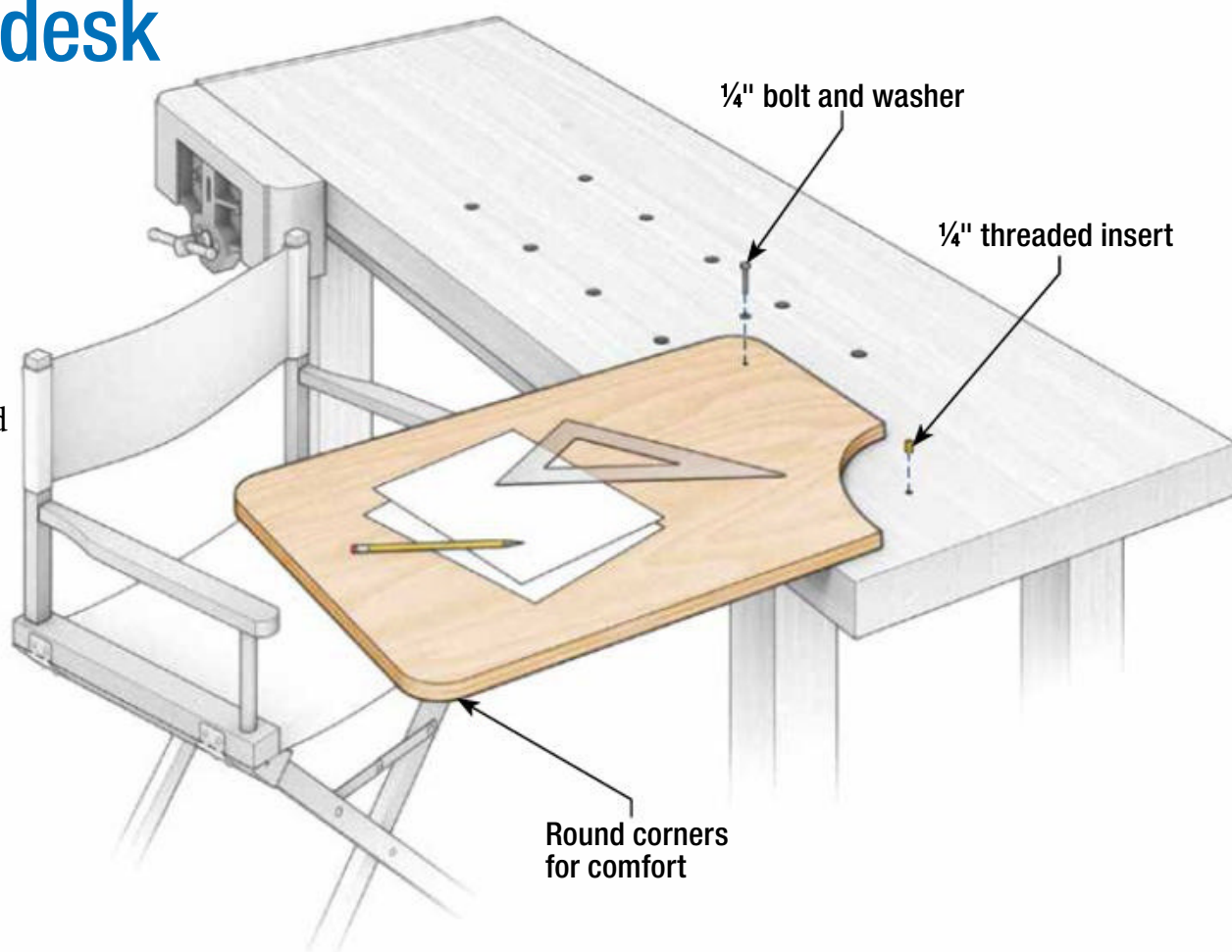
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Impromptu shop desk

I often need a desk for paperwork or other seated tasks, but I don't have space for a freestanding one. My bench is a poor substitute: even when it is not covered with projects, it doesn't have knee room underneath. My solution was to add a removable wing at its right-hand end made from a piece of smooth-faced $\frac{3}{4} \times 20 \times 30$ " plywood. It attaches via $\frac{1}{4}$ " bolts that thread into inserts recessed into the benchtop. The result is a sturdy, spacious auxiliary work surface with room for my knees below. It's perfect for sketching designs, taking project notes, and working with small parts. When I don't need the desk, it can be removed in seconds and stashed out of the way.

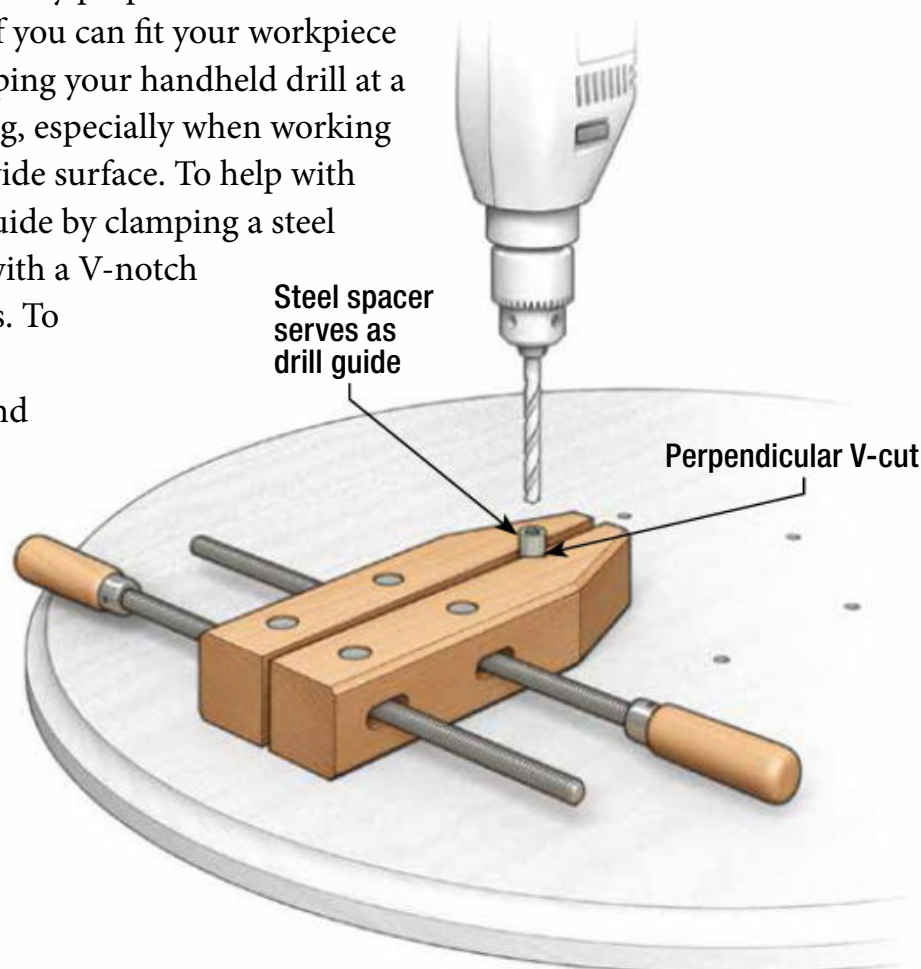
—Bill Wells,
Olympia, WA



Perfectly perpendicular holes

Drilling a hole that is exactly perpendicular to a surface is easy enough if you can fit your workpiece on a drill press. But keeping your handheld drill at a perfect 90° is challenging, especially when working toward the center of a wide surface. To help with this, I made a drilling guide by clamping a steel spacer in a handscrew with a V-notch sawn into one of its jaws. To make your own, cut the notch at the table saw and use the reassembled handscrew to hold a spacer whose inner diameter just accommodates your drill bit. My local hardware store carries these spacers in 2" lengths with inside diameters ranging from $\frac{1}{16}$ – $\frac{1}{2}$ ". ■

—Richard Entwistle,
Highland Lakes, NJ



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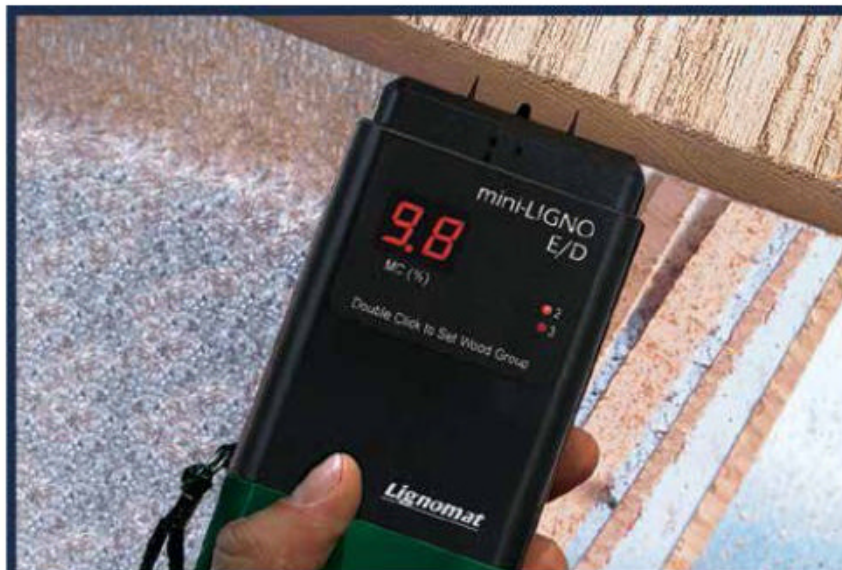
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A close-up photograph of a person's hand, wearing a black watch, pouring a clear liquid from a glass measuring cup into a wooden tray. The tray is divided into sections and contains some small, dark, circular objects. The background is a warm, out-of-focus wooden surface.

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CAMP STOOL

Leather and logs make for one sturdy seat

By Derek Richmond



Designing this folding camp stool spurred a conversation with a fellow woodworker about whether it was a campaign stool or a camping stool. Campaign furniture—those dressers and trunks we envision being carried on the backs of elephants in colonial India or adorning Civil War era military headquarters tents—needed to be rugged, easily transported, and stylish enough to befit the military officers it served. Camping gear has similar requirements.

It, too, should be quickly and easily knocked down, lightweight, and yet stout enough to survive frequent re-encampments. Though few of us travel to camp sites by elephant these days.

In the end, this stool fits into both worlds. It's rugged owing to the straight-grained, rived legs and its thick buffalo hide leather seat. The clever tri-bolt lets it fold up but still hold plenty of weight. And it's stylish enough for either a general's tent or a late-summer campfire.



Order of Work

- Cut seat parts
- Stitch pockets
- Rive leg stock
- Finish and assemble

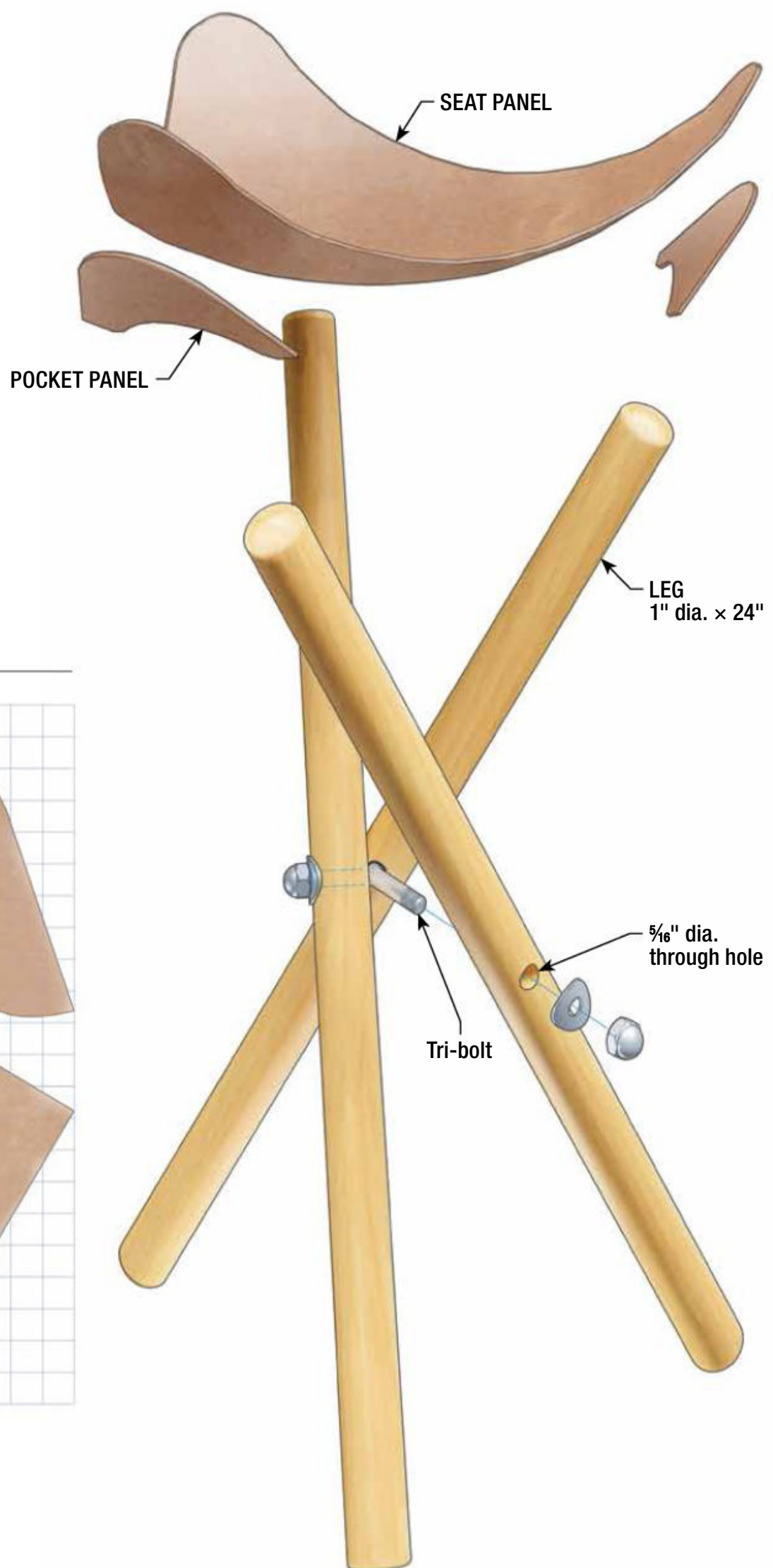


onlineEXTRA

- Full-sized seat patterns

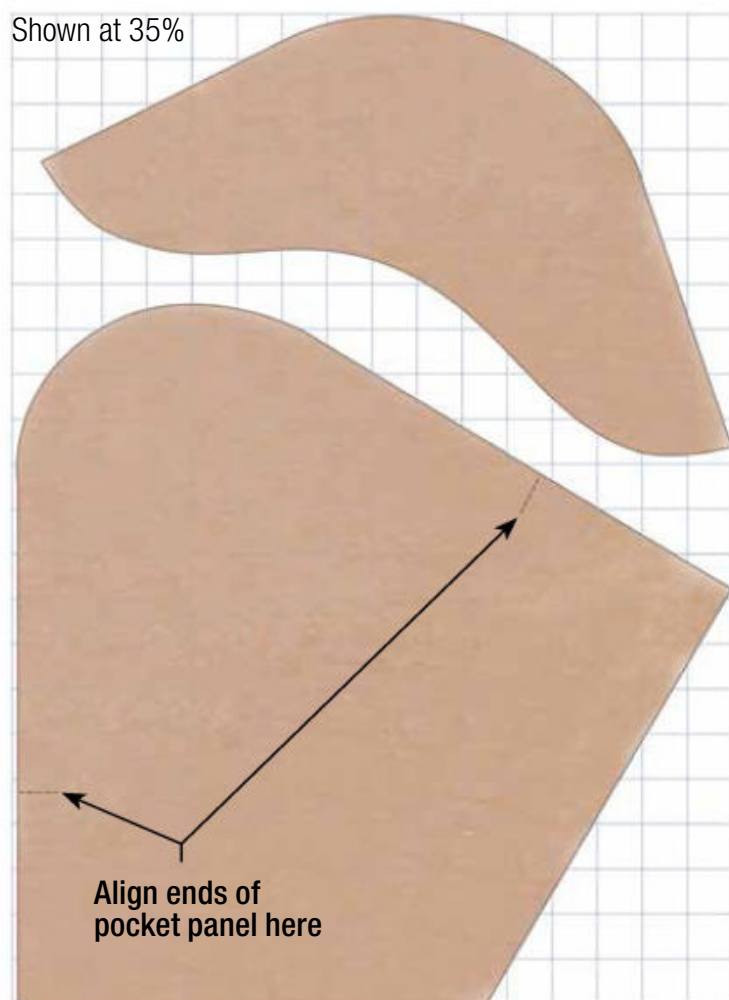
Hewn legs and sewn seat

Constructing the stool is straightforward thanks to the clever tri-bolt (See Buyers Guide, pg. 60), but stitching pockets on the leather seat and riving legs from green lumber may expand your skill set. The leatherwork uses a few inexpensive specialty tools, along with a few woodworking tools you probably already have. And if you don't feel like riving your own legs, you can buy dowels or turn your own from oak, ash, or hickory and use them instead.



Seat Pattern

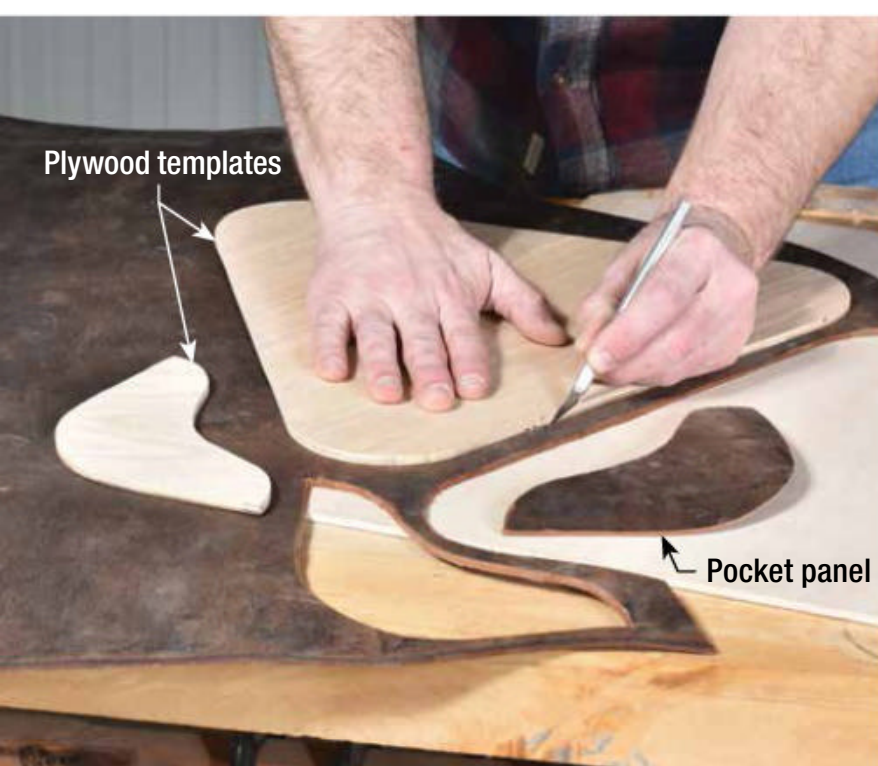
Shown at 35%



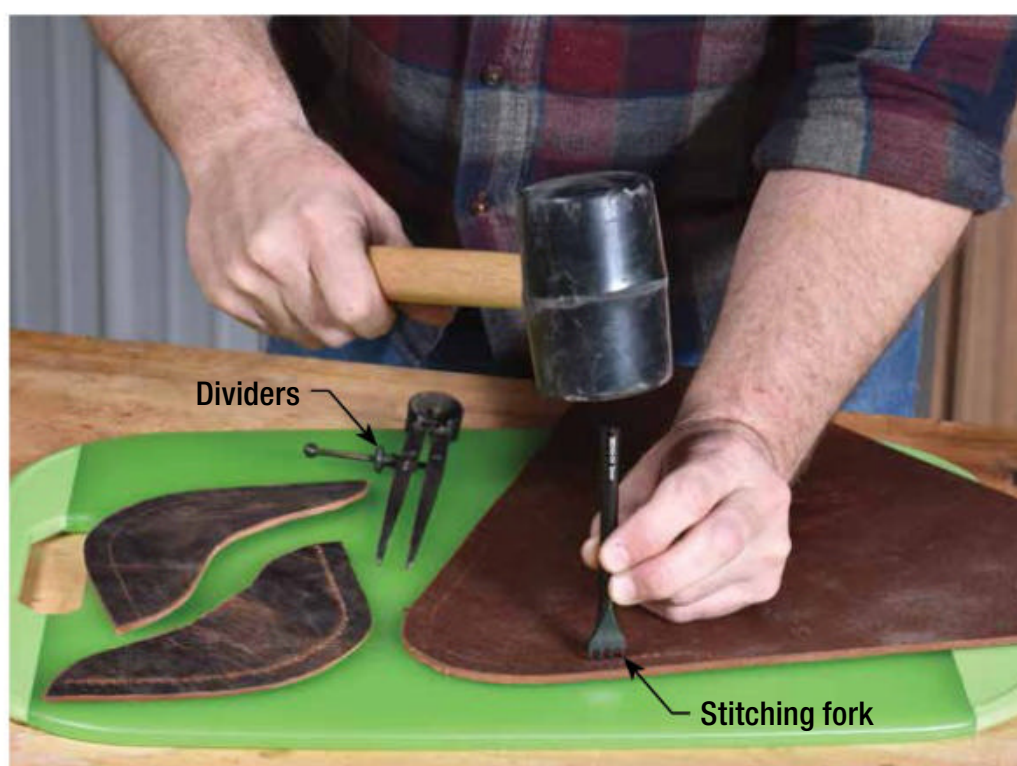
Hide and seat

Maximize the strength of your seat by choosing at least 6 oz. leather (an ounce tends to be about $\frac{1}{64}$ " thick). If using a whole or half hide, cut seat parts from the edge nearest the spine of the animal, which stretches less. Choose a waxed leather that has been tanned with either an aniline or semi-aniline dye. The waxed finish gives the leather added durability and water resistance, while the dye brings out the natural grain. As you use the stool, the leather will develop a beautiful patina as it ages. Make patterns and

cut the leather parts with a hobby knife, then punch holes as shown. Sew the parts together using either waxed linen or polyester thread. At the end of the seams, tie off the threads to keep the pieces from coming undone. Linen thread requires a knot such as a double or square—I used a surgeon's knot, if you know your knots—at the end, while poly thread can be tied off, snipped, and melted using a lighter. With the pockets sewn, touch up the edges with fine sandpaper, then apply beeswax to seal and waterproof them.



Cut the hide. Slice through the leather with a sharp hobby knife. If you're making more than one stool, it's worth making the patterns from plywood or heavy cardboard.



Punch the holes. Lay out the stitching lines $\frac{1}{2}$ " from the edge of each piece with dividers. Then punch holes along the lines with a stitching fork and rubber mallet. Punch the same number of holes in both the pocket panels and around the corners of the seat panel—mine took 48 holes for each corner.

The Saddle Stitch

Clamp the pieces together with binder clips. Thread and tie a needle on each end of a 72" thread and push one needle through the first hole so half the string is on each side. Drive the left-hand needle through the second hole from left to

right. Then, drive the right-hand needle through the same hole from right to left. Continue stitching, pushing each needle through the same holes and pulling the stitches tight as you go. Tie off the thread at the end of the seam.



Logs to legs

Start with a straight-grained log about 26" long and 8" in diameter. Hickory, ash, and oak are great choices, but black locust and even sugar maple will make sturdy legs as well. Your local tree removal service or firewood seller may be able to help you source logs. Split the log in two using a froe, and/or splitting wedges and a sledge hammer. Repeat the process to turn each half round into three wedge-shaped billets. Trim off the corners with a hatchet, then turn to a drawknife and spokeshave to refine the shape. If you don't have a shaving horse, you can hold the legs by securely clamping them to your bench as shown. Make the leg diameter between $\frac{7}{8}$ " and $1\frac{1}{8}$ " to fit the tri-bolt, then cut the legs to length and round over each end. Drill a hole in each leg for the tri-bolt. Sand and finish the legs with a suitable protective coating, then give the seat a rub with saddle soap or baseball glove oil to keep the leather supple and strong before assembling.



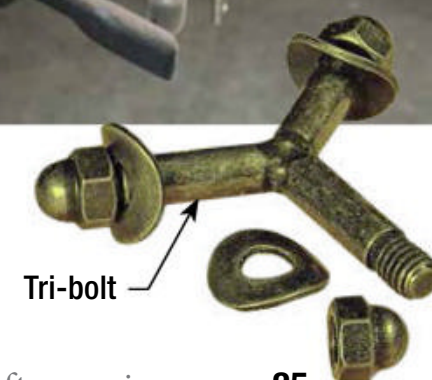
Split the log. Split the log in half using a froe and mallet. Use a splitting wedge to capture your progress as you drive the froe. Then split one half into three triangular billets, each of which will become a stool leg.



Round the legs. After trimming away the corners, securely clamp the rough leg blank to your bench and mark the ends with the final leg shape. Round it with a draw knife and spokeshave. If desired, smooth away any facets with a concave cabinet scraper.



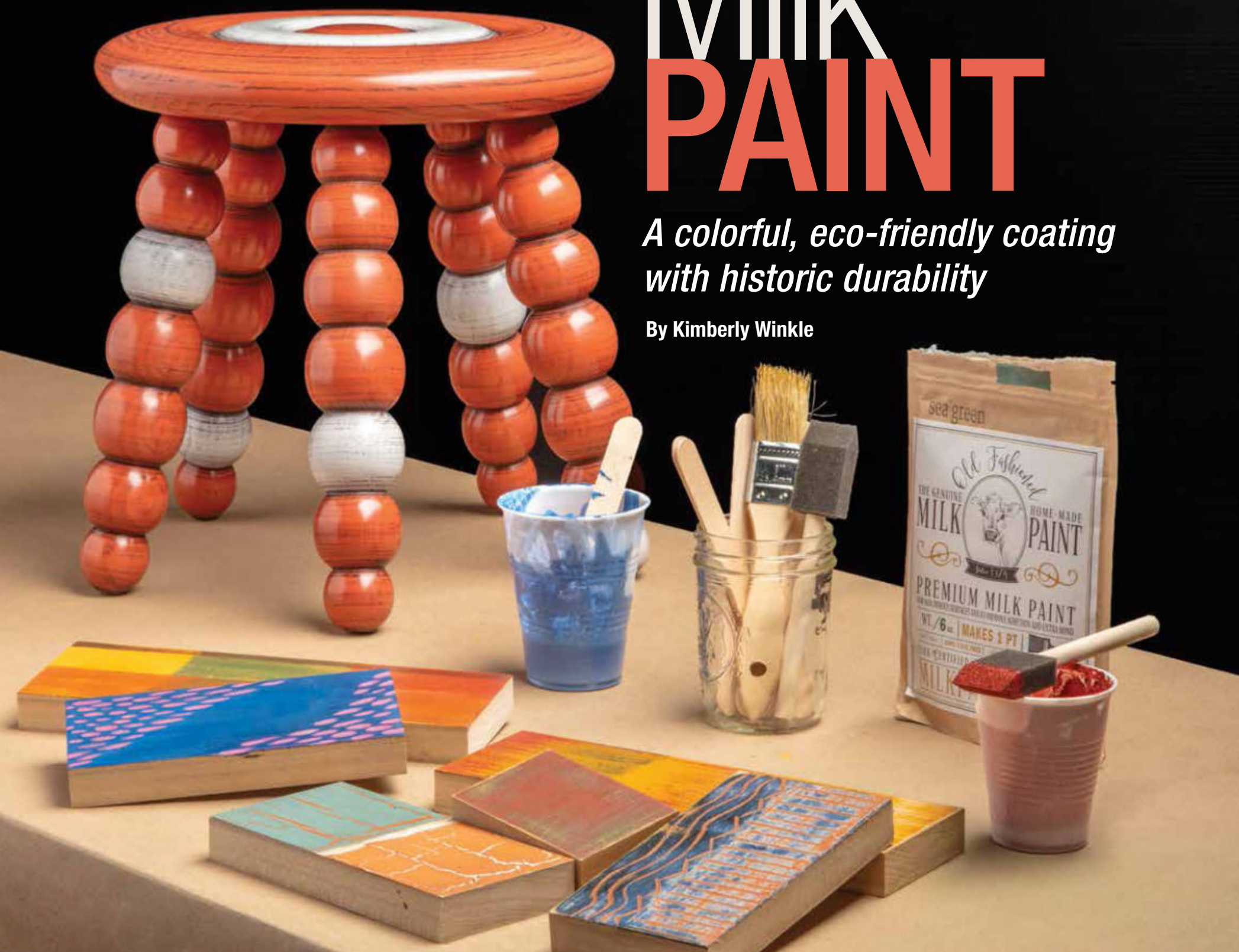
Drill for the bolt. Cradle the legs in a V-block clamped to your drill press table. Drill a $\frac{5}{16}$ " diameter hole at the midpoint of each leg. ■



Milk PAINT

*A colorful, eco-friendly coating
with historic durability*

By Kimberly Winkle



Milk paint's durability, ease of application, and visual characteristics have made it a colorful go-to finish for ages. Made popular for its use in venerated furniture styles such as Colonial and Shaker, it has withstood the test of time. Contemporary makers have embraced its luscious surface quality, durability, and environmental friendliness on pieces ranging from turnings to band saw boxes and furniture. It works equally well as a solid, single color, as a thin transparent

wash, or layered with other colors to accentuate textured surfaces.

I have been using and teaching about milk paint for several years and find a lot of people still have questions about how to take advantage of this wonderful finish. This article lays out my approach to using milk paint from mixing (it comes as a powder) to applying, and finally to finishing. I encourage you to explore this vibrant coating on your next project; your only limitation is your imagination.

About the Author



Kimberly Winkle is a Professor of Art and the Director of the School of Art, Craft & Design at Tennessee Technological University. Working with wood and paint, Winkle creates furniture and objects with a careful balance

of form, color and surface pattern. This is her first article with *Woodcraft Magazine*.

What is milk paint?

Milk paint is comprised of fine powdered clay, pigment, lime, and casein, the protein found in the source of the paint's name, milk. It is sold as a dry powder that you mix with water to reach a brushable or sprayable consistency. The added water acts as a catalyst to activate the chemical reaction between the casein and lime, resulting in a sticky adhesive substance that serves as the paint's binder. Traditionally, the colors came from earth pigments which made for a softened, somewhat hushed color palette. Today, however, most manufacturers employ synthetic colorants to create a vivid spectrum of colors to choose from. At first, milk paint dries hard and chalky, but it is easily sanded and burnished to a silky sheen. Milk paint is also VOC (volatile organic compound)-free so it doesn't emit toxins as it dries and can be disposed of easily by simply washing it down the drain or tossing it out.



Keep powdered coatings dry. Milk paint powder is sensitive to moisture and must be kept in airtight containers until ready for use. Glass Mason jars work well for this purpose. If the powder absorbs excess moisture from the air, the necessary chemical reaction won't occur when you mix the paint and it won't bind to your substrate.

Safety First

Milk paint is non-toxic, but while you are working with the powder, it's important to take some precautions. Wear a good-fitting dust mask while mixing and sanding to avoid inhaling any of the fine powder. And wear safety glasses and gloves to protect your eyes and skin from the lime.



A colorful array. Modern milk paint manufacturers offer their products in a wide variety of colors with color cards and swatches available to help you choose.



Endless variety and durability. You can create depth and pattern by applying multiple layers of different colors and painting over textured and carved surfaces.

Mixing milk paint

Milk paint is mixed 1:1 with water by volume. In two separate cups, measure out equal amounts of dry paint and warm water. I prefer to use distilled water because varying pH-levels in tap water can cause milk paint to congeal in some instances. Add small amounts of the measured water to the dry paint and stir carefully to reduce kicking up the fine dust particles. Continue to mix the moistened paint until a smooth paste has developed. Incrementally add more of the water to the paste until it has all been incorporated. Let the freshly mixed paint sit for 10-15 minutes to allow all of the fine particles to “bloom” or become fully hydrated; a layer of fine bubbles will likely form on the surface of the paint, indicating the chemical reaction is taking place between the casein and lime. Prior to using the mixed paint, it should be strained to remove any small particles that did not fully incorporate. If your strainer is reusable, be sure to rinse it out immediately: dried milk paint will not redissolve. The finished consistency of the paint after blooming and straining should be like heavy cream. Add more water at this point to thin, if needed. Once mixed, milk paint has a short shelf life. Make only the amount that you plan to use that day, although I have had some luck refrigerating for short periods of time.



A 1 to 1 ratio. Measure out equal amounts of dry paint and warm water. I like to use ribbed plastic cups for ease of measuring quantities plus the ribs help with mixing.



First make a paste. Slowly add small amounts of the warm water to the powder. Stir the moistened paint powder until a smooth paste has developed. Press and rub the paste against the cup's ribs to smooth out the texture.



Filter out the grit. After allowing the mixed paint to bloom, strain it into a clean cup to remove any clumps. At this stage, it should have the consistency of heavy cream. Strain any leftover paint into an airtight container and store in the fridge for up to 24 hours.



Applying milk paint

Milk paint can be brushed or sprayed on nearly any surface (although the nuances of spraying are outside the scope of this article). I alternate between using foam and bristle brushes. I like wide foam brushes for broad and flat surfaces but prefer soft, natural bristle brushes for textured surfaces and for getting into corners. Generally, I find synthetic bristles are too stiff and don't carry as much paint.

Milk paint acts as its own primer so it is not necessary to prime the surface prior to painting. In fact, milk paint prefers a natural un-primed surface that is sanded to about 120-180 grit so that there's enough "tooth" for the paint to adhere to. If painting on pre-sealed surfaces, tight-grained woods, such as maple or birch, or non-porous surfaces such as metal, add Extra-Bond (see p.60) to the first coat of paint.

If painting a flat wooden form, apply the paint with the grain direction. If painting on the lathe, it's important to use a very slow speed to prevent the paint from spraying everywhere. In all cases, it's better to apply a few thin coats instead of a single thick coat of paint, which can easily drip, sag or catch debris from the air as it's drying. I generally use three or four thin coats of milk paint on my work, but I have used up to seven or eight on textured items.



Laying down a first coat. Paint a smooth coat over the surface of the wood and wait for it to dry fully prior to applying additional coats, about 20-30 minutes. You'll know it's dry when it appears flat and somewhat chalky.



Building layers. After the first coat of paint has dried fully, lightly sand with 220 grit sandpaper to knock down any raised grain and to smooth the surface; remember to wear a dust mask while sanding. Continue adding as many layers of paint as needed for the effect you're going for.

The Importance of Making Samples

I strongly encourage making paint sample boards to test different colors and techniques before committing them to a finished piece. Milk paint is quite durable, which can be both good and bad. It's good for overall longevity, but it can be difficult to remove from surfaces, especially those with texture, should you make a mistake. I like to make several sample boards when I'm working on a project to inform my final decision-making process. Additionally, these samples are invaluable references to have on hand when working on other projects. I record the paint colors used, order of paint layers and sequence of processes on the backside of each sample board before I store them away. At this point, I have a library of sample boards that utilize a variety of color combinations, carving, texturing, and finishes.



Shortening the dry time. A warm (not hot) hairdryer can speed up the drying process, but be careful not to overheat the surface or the paint may crack.

Carving, texturing, and layering

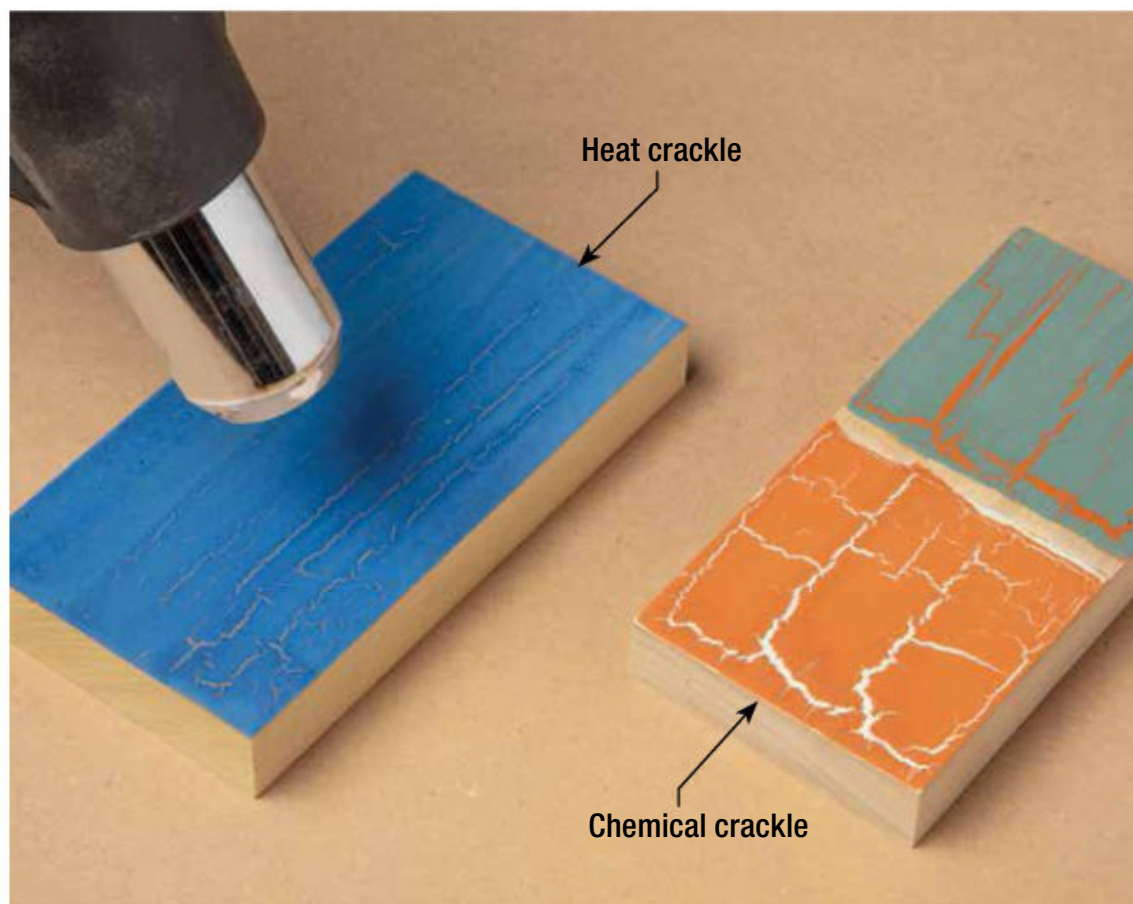
Milk paint is very versatile; it can take on a variety of appearances and it works exceptionally well over textured surfaces to accentuate variations. Typically, I paint on top of carved/textured surfaces instead of carving through a painted surface. Carving into milk paint will dull tools quickly. I like to use carving gouges, rasps, planes, and spokeshaves to shape surfaces that either highlight the form's contours or that suggest other materials, such as grass. When I am painting over carved surfaces, I like to use layers of contrasting paint. I have found that, after sanding and burnishing, the color contrast amplifies the visual impact of the textured surfaces. Other effects such as crackling can be achieved through the application of specialized coatings and/or heat. See the Buyers Guide on page 60. And check out online EXTRAS for more crackling techniques.



Carve first, paint later. Milk paint will dull a carving tool quicker than carving through bare wood, so do your carving first and build layers of color on top of the textured surface. Natural bristle brushes are great for getting into crevices and corners.



Sand through the layers. Generally, the last color applied (blue, in this case) is the color that will settle into the deepest carved section. The underlying color (yellow), or colors, will be revealed through sanding and burnishing.



Paint, crackle, pop. Using a product such as Old Fashioned Milk Paint Company's Antique Crackle between layers of paint, you can achieve a variety of striking surface patterns. Or float a thick layer of milk paint across a surface and rapid-dry with a heat gun for a subtler effect.

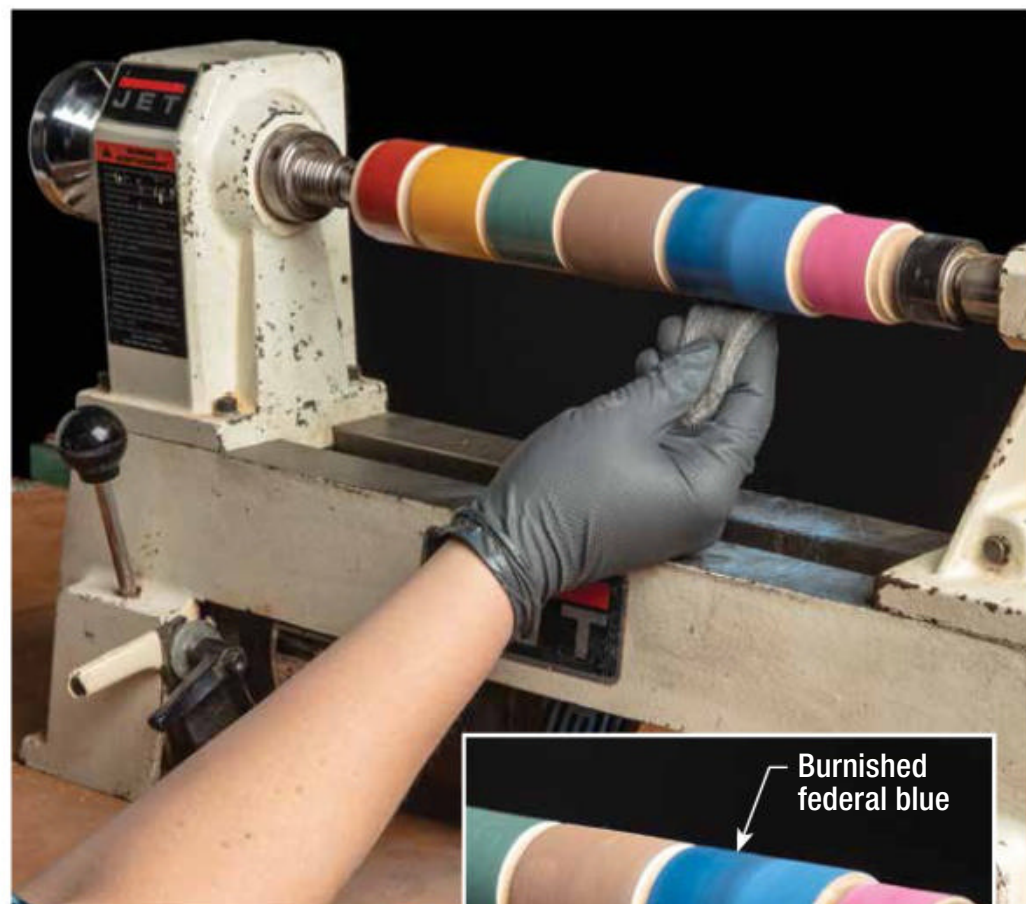
Sanding and finishing

On its own, milk paint dries to a flat, lackluster, chalky finish. However, it easily burnishes to a smooth, buttery surface with a subtle sheen that is both beautiful and tactilely inviting. To create an aged effect, or to highlight a textured surface, build up layers of different colors before sanding some of them away with 220 grit sandpaper. Once you have finished sanding, burnish by rubbing the surface with fine steel wool, wood shavings, or synthetic abrasive pads.

Finally, although milk paint is durable and hard, it is not watertight and it will water spot and absorb oils and other dirt. So a protective top coat will help to keep your paint looking fresh for years. Most clear finishes, such as penetrating oils, wipe-on polyurethane, and wax will work over milk paint, but be sure to test a sample first. In all cases, the finish will deepen the color slightly. Make the decision as to what topcoat to use based on the intended purpose/function of the object you've made.



Sanding through layers. Use 220 grit to sand through multiple layers of contrasting paint colors. Gradually sand away as much of the top colors as desired, knowing that you can always take more away but it's very difficult to reapply paint without it looking like a patch job.



Burnish for beauty. Burnishing with steel wool polishes the dull, chalky dry surface to a buttery, silky sheen.



Seal the finish. Although milk paint is durable and hard, it's not watertight. To avoid water spots and other stains, add a few coats of a clear finish such as wipe-on poly for a final layer of protection. ■

Round JEWELRY BOX

Rotating drawers for holding treasures

By Ken Burton



Unlike so many wooden boxes that are designed around squares or rectangles, this elegant walnut box with its stack of painted drawers is based on a circle. And rather than having the drawers slide out of their openings, these pivot to reveal their contents. The build presents a number of challenges in the shop: The drawer sides are bent laminations made from veneer, fastened to the fronts using special dowels

(see Buyer's Guide, p. 60). The drawer fronts are bandsawn to shape and then lightly carved before finishing with milk paint. (For more on this versatile colorant, see p. 26. And the box walls are made from a series of staves which fit into grooves routed into the top and bottom with the help of a router trammel. In all, this is a fun build with some good technical hurdles to overcome.

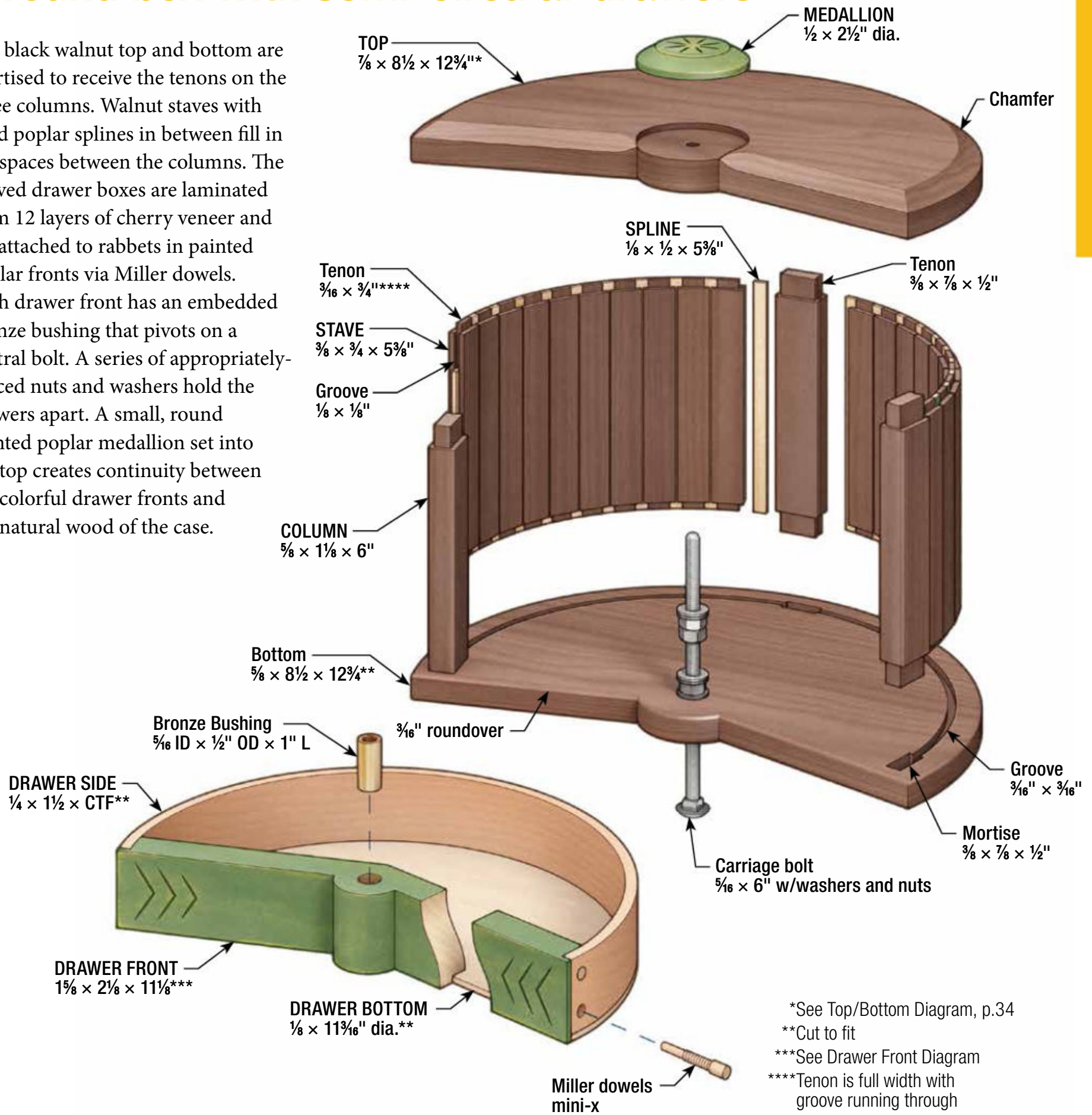


Order of Work

- Make the top and bottom
- Make the wall parts
- Make the drawers
- Add profiles and texture
- Finish and assemble

A round box with semi-circular drawers

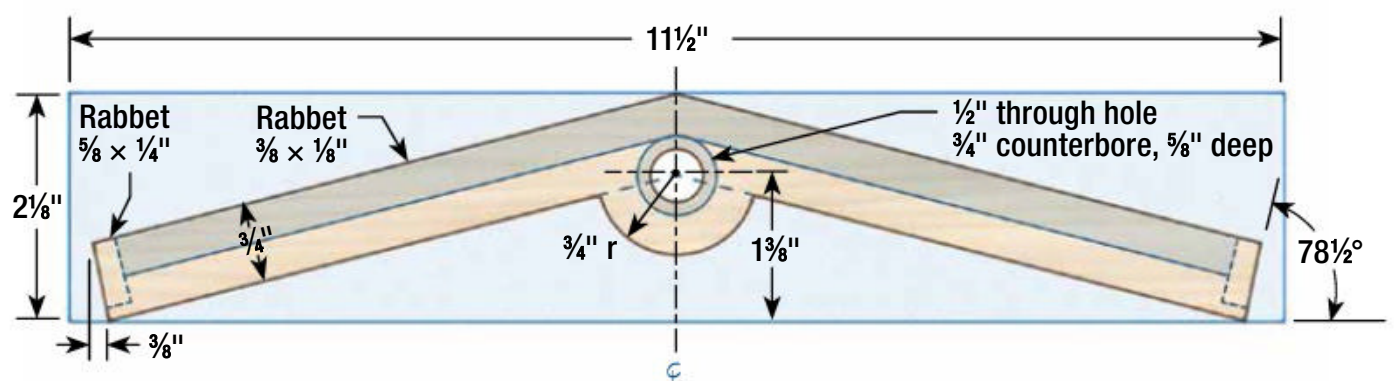
The black walnut top and bottom are mortised to receive the tenons on the three columns. Walnut staves with dyed poplar splines in between fill in the spaces between the columns. The curved drawer boxes are laminated from 12 layers of cherry veneer and are attached to rabbets in painted poplar fronts via Miller dowels. Each drawer front has an embedded bronze bushing that pivots on a central bolt. A series of appropriately-spaced nuts and washers hold the drawers apart. A small, round painted poplar medallion set into the top creates continuity between the colorful drawer fronts and the natural wood of the case.



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- Cutting files for routing the top and bottom with a CNC machine

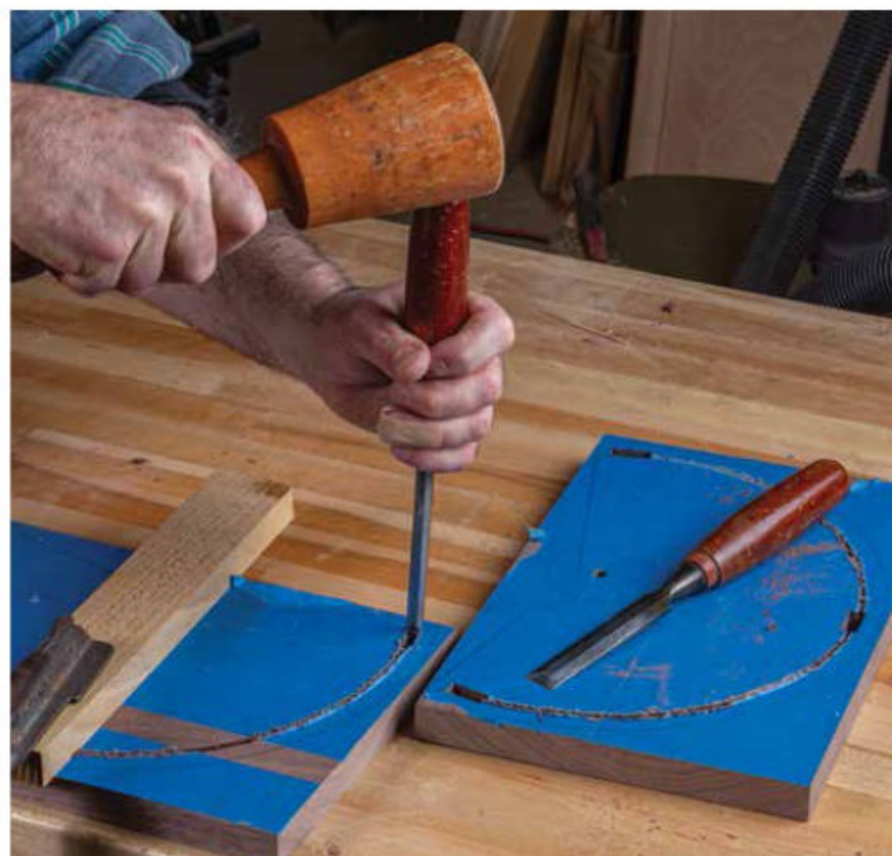
Drawer Front Diagram



Make the top and bottom

Mill stock for the top and bottom, edge gluing pieces if necessary to make up the width. Locate the center point and layout the shape and mortise locations on each piece as indicated in the Top/Bottom drawing below. I covered my pieces with painters tape for easier viewing. Drill the $\frac{3}{4}$ " counterbore for the head of the central carriage bolt in the underside of the bottom piece using a Forstner bit. Then

drill the through hole using a $\frac{5}{16}$ " brad point bit. Also drill a $\frac{5}{16}$ " hole through the top. Now, rout the stave grooves with a $\frac{3}{16}$ " straight bit, guiding the router with a trammel equipped with a $\frac{5}{16}$ " pivot pin. Switch to a $\frac{5}{16}$ " straight bit and rout away most of the waste for the mortises. Square the sides of the mortises with a chisel. Cut out the pieces on the bandsaw, and then sand the edges to remove the saw marks.

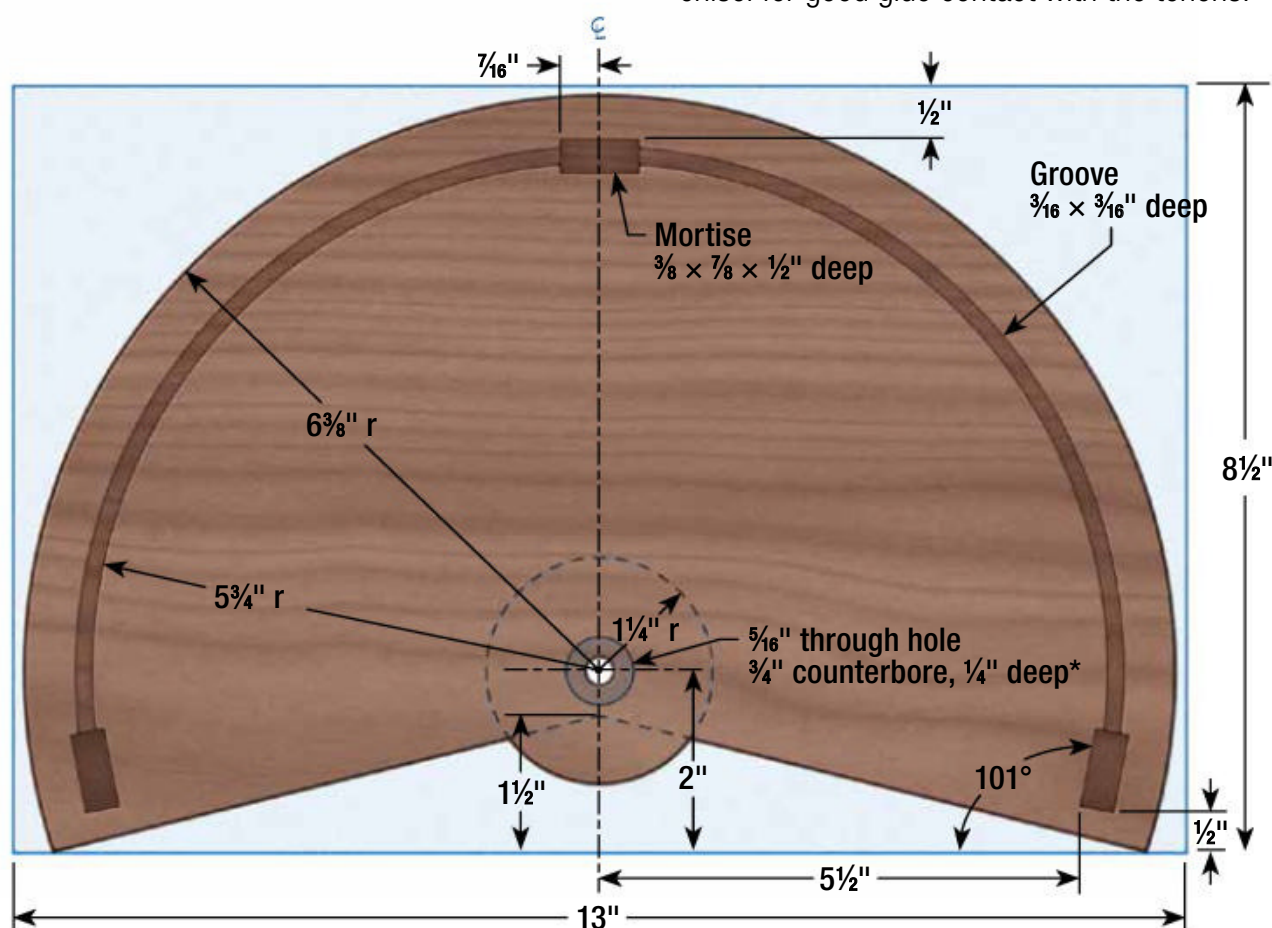


Rout the mortises and grooves. Rout the grooves for the staves then swap bits and rout the three mortises without changing the trammel setting. Use stop blocks to regulate the lengths of the mortises.

Square the mortises. Routing the mortises with a trammel leaves them with slightly curved walls. You'll need to straighten them with a chisel for good glue contact with the tenons.

Top/Bottom

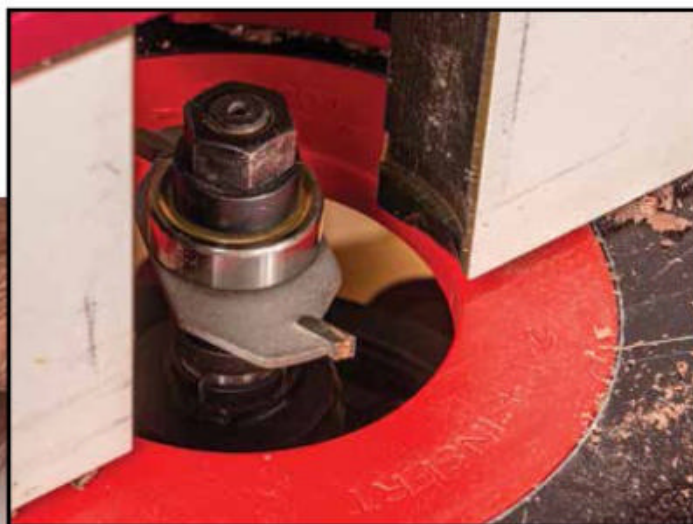
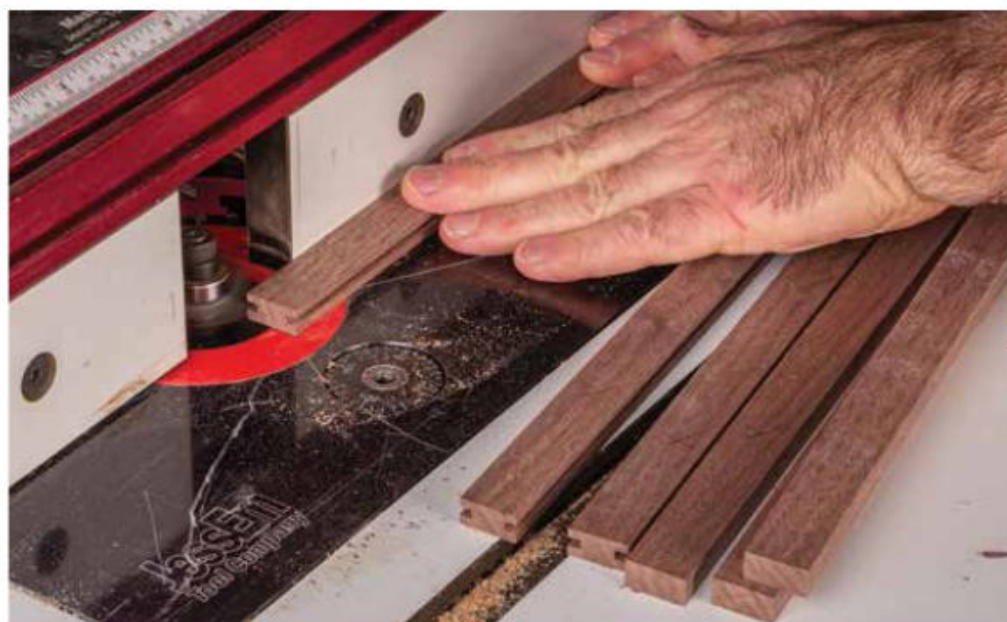
* in underside of bottom only



Prepare the side wall pieces

For safety and efficiency, mill the stocks for the columns, staves, and splines to the appropriate thickness and width in long strips and sand their faces and edges. Then cut the columns to length before routing a single spline groove in the two front columns and two grooves in the rear column. Also rout the spline grooves in both edges of the stave strips as

shown before cutting them to length. Cut tenons on the ends of the columns and staves. Color the splines with TransTint Green before cutting them to length.



Rout the grooves. Cut the spline grooves with a $\frac{1}{8}$ " wing cutter chucked in a router table. Set the height of the cutter to center the grooves in the thickness of each material. Position the fence so the bit makes the grooves $\frac{1}{8}$ " deep.



Rout the tenons. Clamp a sacrificial fence to your router table and raise a 1" straight bit up into it. Expose $\frac{1}{2}$ " of the bit to rout the column tenons, adjusting the bit height as needed. Push the pieces past the bit with a follower block. Reset the fence and bit depth to cut the stave tenons. Save this setup for routing rabbits in the drawer front.



Sawing the spline. Saw, sand, and dye the stock for the splines in long strips. Rather than risk splintering them with a power saw, I crosscut them using a handsaw, holding them against a bench hook.

Build the drawers

Mill the stock for the drawer fronts. Lay out the center pivot point and the overall shape on each piece as indicated on the drawing, (p.32). Cut the pieces to length at the table saw, guiding them with the miter gauge to produce the angles on the ends. Then cut the pieces to shape at the bandsaw. At the router table, rabbet both ends of each piece for the side joinery before rabbeting their undersides for the drawer bottom. For the drawer sides, screw, but don't glue together a 10 $\frac{5}{8}$ " diameter bending form from three layers of $\frac{3}{4}$ " sheet stock. Laminate 12 layers of $2\frac{1}{4} \times 24$ " veneer strips around the form. After the glue dries, use the form and a flush trim bit at the router table to clean up their edges, while cutting them to width. Trim them to length at the bandsaw before fastening them to the fronts with Miller dowels. Drill the counterbores in the underside of the fronts and the through holes for the bushings. Cut the drawer bottoms to shape from $\frac{1}{8}$ " plywood before gluing them to the bottom of the drawers.



End rabbets. Rout the $\frac{5}{8}$ " wide, $\frac{1}{4}$ " deep rabbets in the ends of the drawer fronts. Push the pieces through the cut with the follower block, notching it if necessary to accommodate the fence clamp.



Trim to width. Remove one $\frac{3}{4}$ " layer from your bending form. Attach the lamination to the now two-layer form with double-faced tape and rout it to its final $1\frac{1}{2}$ " width with a flush trim bit.



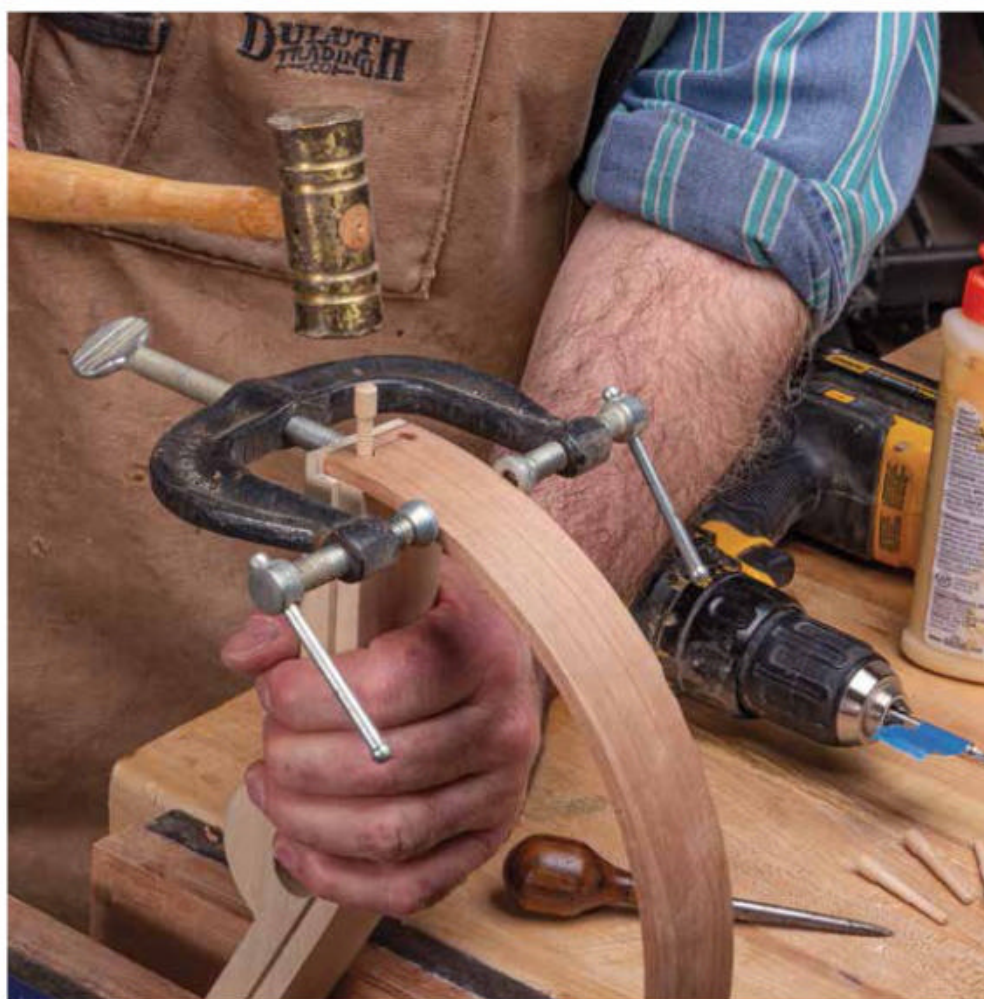
Determine the length. Lay out the overall shape of the drawer on a piece of cardboard. Hold the lamination in place to mark its length at both ends. Extend the line across the width of the piece as shown before cutting it on the bandsaw.



Bottom rabbet. Change the setup once more to cut the $\frac{3}{8}$ " wide, $\frac{1}{8}$ " deep bottom rabbets in the fronts.



Bend the sides. Apply glue to the veneers with a roller and clamp them around the form with a band clamp. If you don't have a wide clamp, two narrower ones will work.



Attach the sides. Clamp the lamination into its mating rabbets and drill for the dowels. You may need to pare the drawer front's shoulders with a chisel to match the lamination's curve. Apply glue and tap the dowels home.



Add the bottom. Rough cut the bottoms about $\frac{3}{4}$ " oversize. Hold them in place and trace along the front to mark where the bottom will fit into the front rabbet. Trim to fit and glue.

Embellish the pieces

Chamfer the upper surface of the top at the router table, stopping the cuts before the bit cuts into the center bulge. Recess an area for the center medallion. Round over the underside of the top, both sides of the bottom, and the edges of the columns

with a $\frac{3}{16}$ " roundover bit. Make the medallion for the center of the box top. I turned mine on a lathe, but you can simply saw it to shape and round the top edge. Add texture to the medallion and the drawer fronts with a veining chisel.



Medallion recess. Rout the perimeter of the 2½" diameter recess in the top with a ½" straight bit and your trammel setup. Then remove the waste in the middle with a chisel.



Add texture. Carve the chevron patterns near the ends of the drawer fronts with a veining chisel. Because all three drawers have matching patterns, I measured and laid out the lines carefully.



Medallion lines. For the medallion, I opted to eyeball the layout, placing a straight edge in front of the piece as a visual reference. The box top served as a convenient holder when carving the small part.

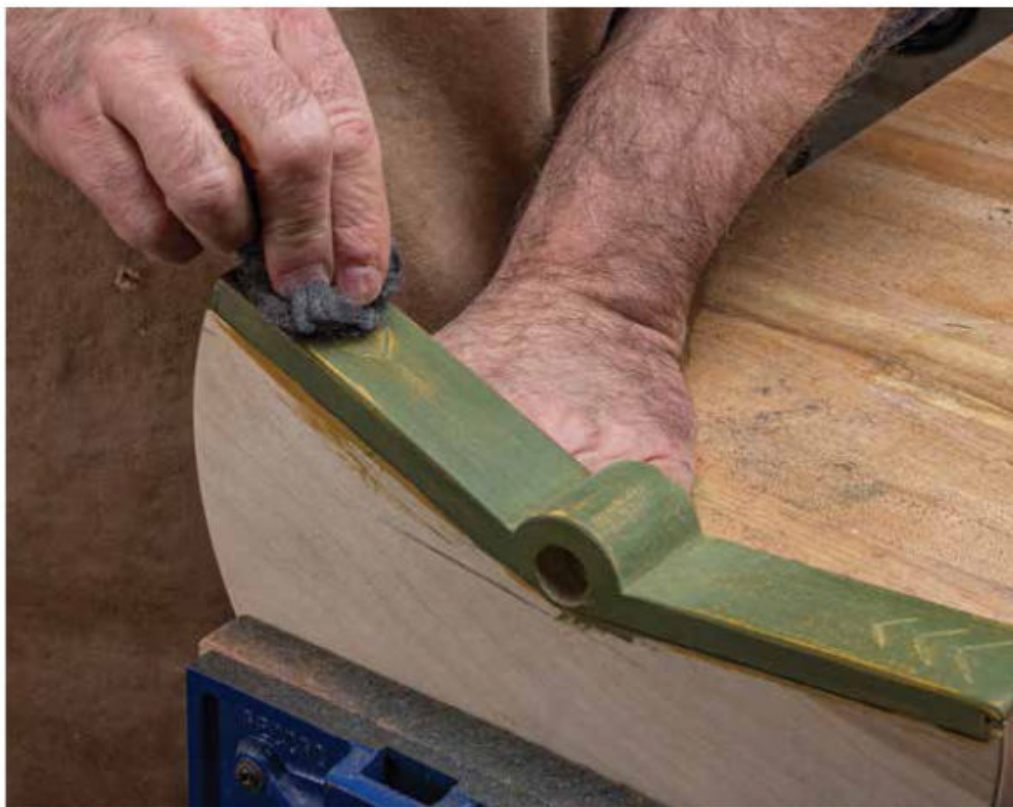
Finish and assemble

Paint the drawer fronts and the medallion. Glue the medallion in place. Finish everything with a clear topcoat. I used Osmo's gloss Polyx-Oil. Take care to keep the finish out of the mortises and away from the glue surfaces on the columns. Fasten the carriage bolt to the bottom with a flat washer and nut. Slip the bottom drawer in place. If necessary, add additional washers under the drawer to position it so it doesn't rub on the bottom. Add two nuts to the bolt, twisting

them together to lock them in place. Slide the second drawer in place, again using washers between the lock nuts and drawer for spacing. Repeat for the top drawer. Dry assemble the box to make sure everything fits right. Then apply glue to the mortises in the bottom. Add the columns and fill in between with the staves and splines. Spread glue in the top mortises and clamp the case together. Done.



Coat and undercoat. I used marigold yellow milk paint for my undercoat followed by bayberry green on top.



Burnish. After the paint dries, burnish it with fine sand paper followed by steel wool to create the weathered look.



Two wrenches to tighten. Add lock nuts and washers to space the drawers apart. Tighten the nuts against each other and try the drawer. Reposition the nuts and/or add more washers to adjust the space under the drawer as needed.



Assembly. Once the drawers are spaced correctly, fit the columns, staves and splines, trimming the width of the splines if necessary to keep the spacing consistent. Dry fit all, then glue up. ■

Outdoor BENCH

A backless Arts & Crafts seater for the garden

By Chad McClung



With the warm weather here, you'll want to spend more time outdoors. And what better way to do so than on an attractive bench you've built in your shop? Made from 8/4 white oak to withstand the elements, this bold Arts & Crafts design commands attention. And its subtle tapers and arches invite passersby to slow down and take a seat to appreciate the beauty that surrounds them.

While an easy, straightforward build, it does include making a few jigs. First, you'll need a template for routing the mortises. Then you'll build a table saw tapering sled for shaping the legs. And finally, you'll need to put together a

planer sled for beveling the seat slats along their length. These bevels serve two purposes: they contour the seat for comfort and encourage any rain to run off rather than pool on the surface, improving the bench's longevity.

The bench also sports a tough yet, environmentally-friendly outdoor finish to add additional protection and has thin squares of UHMW (Ultra High Molecular Weight) polyethylene screwed to the undersides of its feet. This extra step helps safeguard against the bench scooting on the driveway and wicking moisture from the ground. In all, you'll soon have a good seat from which to relax and enjoy the great outdoors for many seasons to come.



Order of Work

- Shape leg parts and stretcher
- Assemble base
- Route mortises with template
- Taper slats
- Finish and assemble



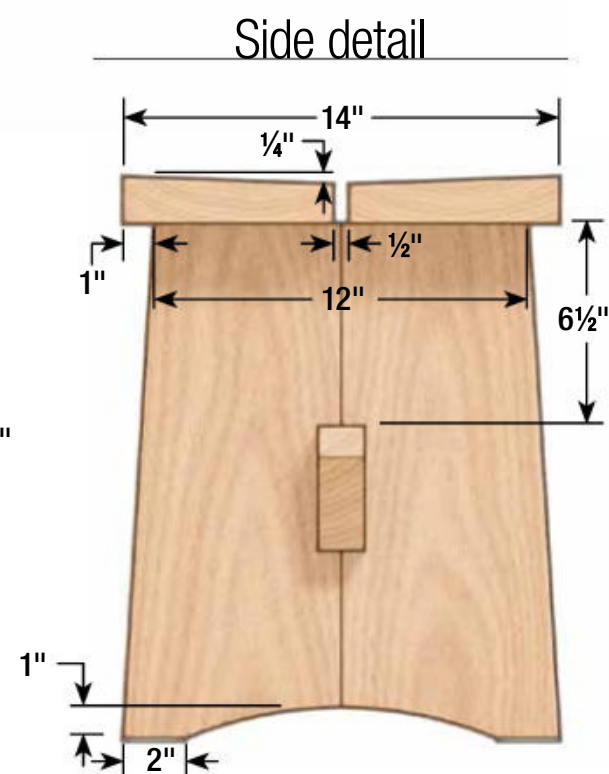
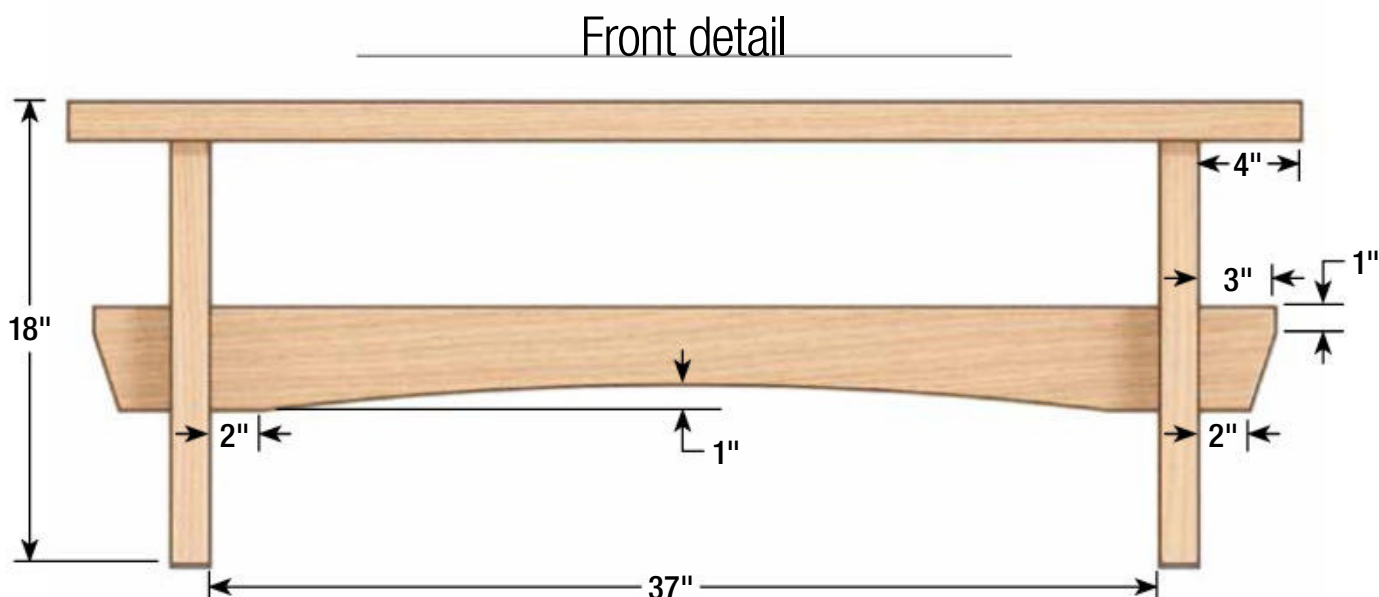
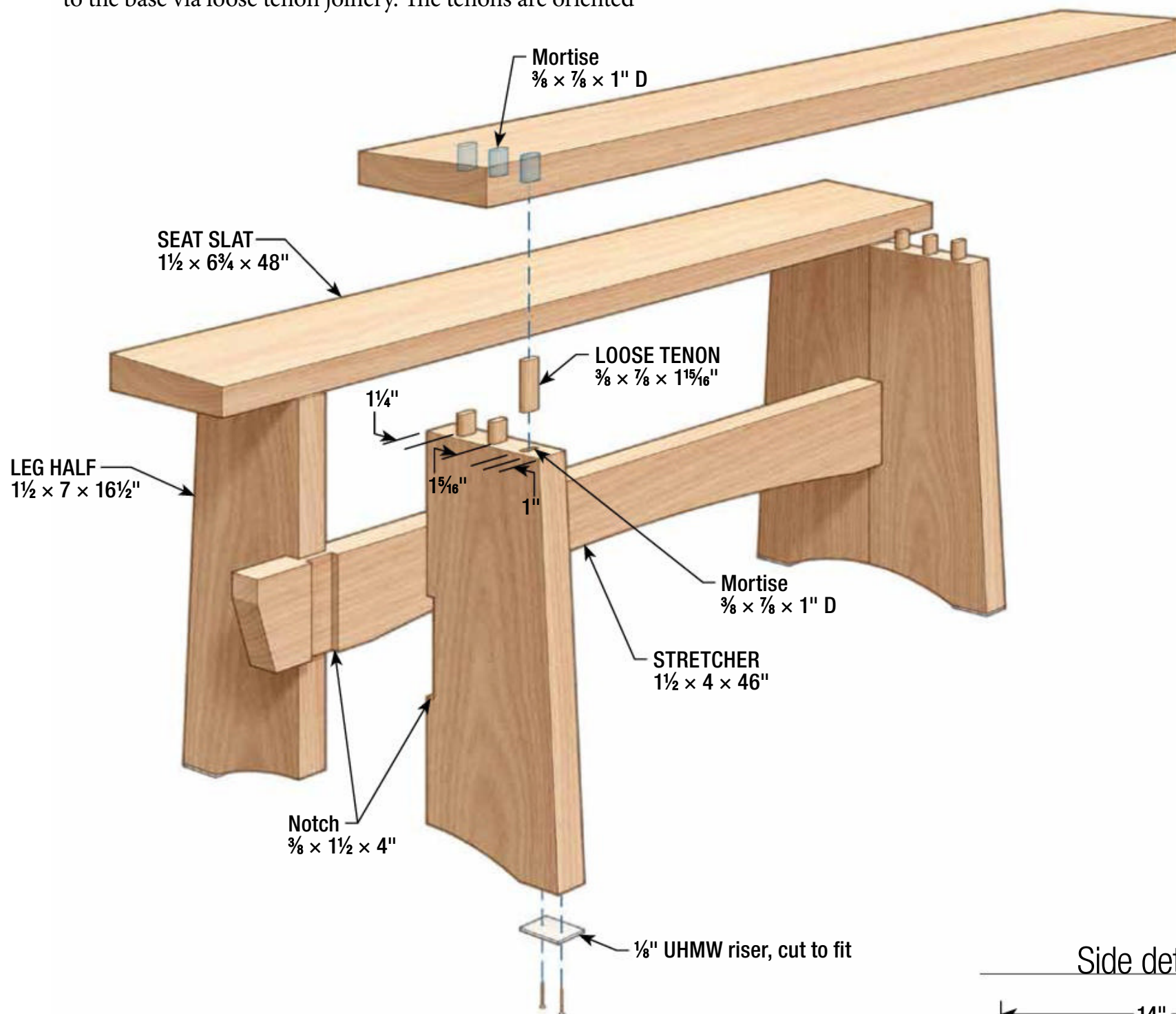
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- Outdoor Finishes

Subtle, strong, and smart

Tapered leg halves are notched and glued around an arched stretcher with mating notches to make up the base. Twin seat slats, tapered in thickness along their length, connect to the base via loose tenon joinery. The tenons are oriented

parallel to the length of the slats to maximize long grain glue surfaces, UHMW risers screwed to the feet help protect the naturally rot-resistant white oak from ground moisture.



Shaping the leg halves

Dress all the parts to size, pairing the legs halves for attractive grain orientation. Lay out the notch on one leg half, and then outfit your table saw with a dado stack. Attach an auxiliary fence to your miter gauge, and clamp stops at each end to control the notch length. Saw the notches as shown, with the top end of each leg half oriented in the same direction for consistent notch placement. Install a thin-kerf rip blade in your table saw.



Notch the legs. Begin with a leg part end against one stop clamped to your miter gauge's auxiliary fence to saw the opposite end's notch shoulder. Make a handful of passes, working your way to the opposite stop to complete the notch's entire length.



Taper the legs. Position a leg half against the sled's fence and stop, and hold it in place with the toggle clamps. Running the fence side of the sled against your saw's fence, push the sled through the saw to taper each leg part.

Lay out the taper on one notched leg half and align it with the edge of a plywood sled sized to accommodate the workpiece and a fence and stop. Place the fence against the leg's notched edge and the stop to its bottom end, screwing them in place. Attach toggle clamps to the fence to help hold the workpiece in place, and taper each leg half. Save the offcuts for assembly later. Now, pair leg halves together to saw and then sand the foot arches.



Sand the legs. Adhere mating leg halves together with double-faced tape, outside face to outside face, and lay out the arch on one face of each taped pair. Bandsaw shy of your layout line, and then clean up the saw marks at the spindle sander.

Making the stretcher and assembling the base

Lay out the notch and bevel on one end of the stretcher. Then lay out the arch by tracing a ruler bowed between the arch's end points up to its center. Switch back to your dado stack and outfit your miter gauge with an auxiliary fence long enough to support the stretcher. Clamp a stop to the right of the blade to locate the cut for the inside shoulder of the stretcher's notches. Make the cut and flip the stretcher edge for edge to saw the notch's inside shoulder on the opposite face. Flip the board end for end and repeat. Add a spacer in between the stop and stretcher and repeat again. Follow suit with as many spacers as needed to equal just shy of the notch's width, testing the fit against an existing leg half. Add shims to sneak up on a perfect fit.

Transfer the bevel angle from the stretcher to your miter saw with a T-bevel. Cut the bevels and then bandsaw the stretcher's arch. Dry-fit the assembly to ensure the base doesn't rock. When satisfied, glue up the base as shown.

Notch the stretcher.

Position and clamp a stop to locate the notch's inside shoulder. Abut the piece to it and make the first cut, and then widen the notch in a few passes by adding spacers and shims.



Bevel the stretcher.

Place the bottom edge of the stretcher against your miter saw fence and align the blade with your layout line. Set a stop on the opposite end. Cut the first bevel and then flip the piece end for end to cut the opposite bevel as shown.



Arch the stretcher. Set up outfeed support to catch the long stretcher if needed, and bandsaw proud of your layout line as shown. Follow up with a card scraper and sanding block to clean up the saw marks and smooth the curve.



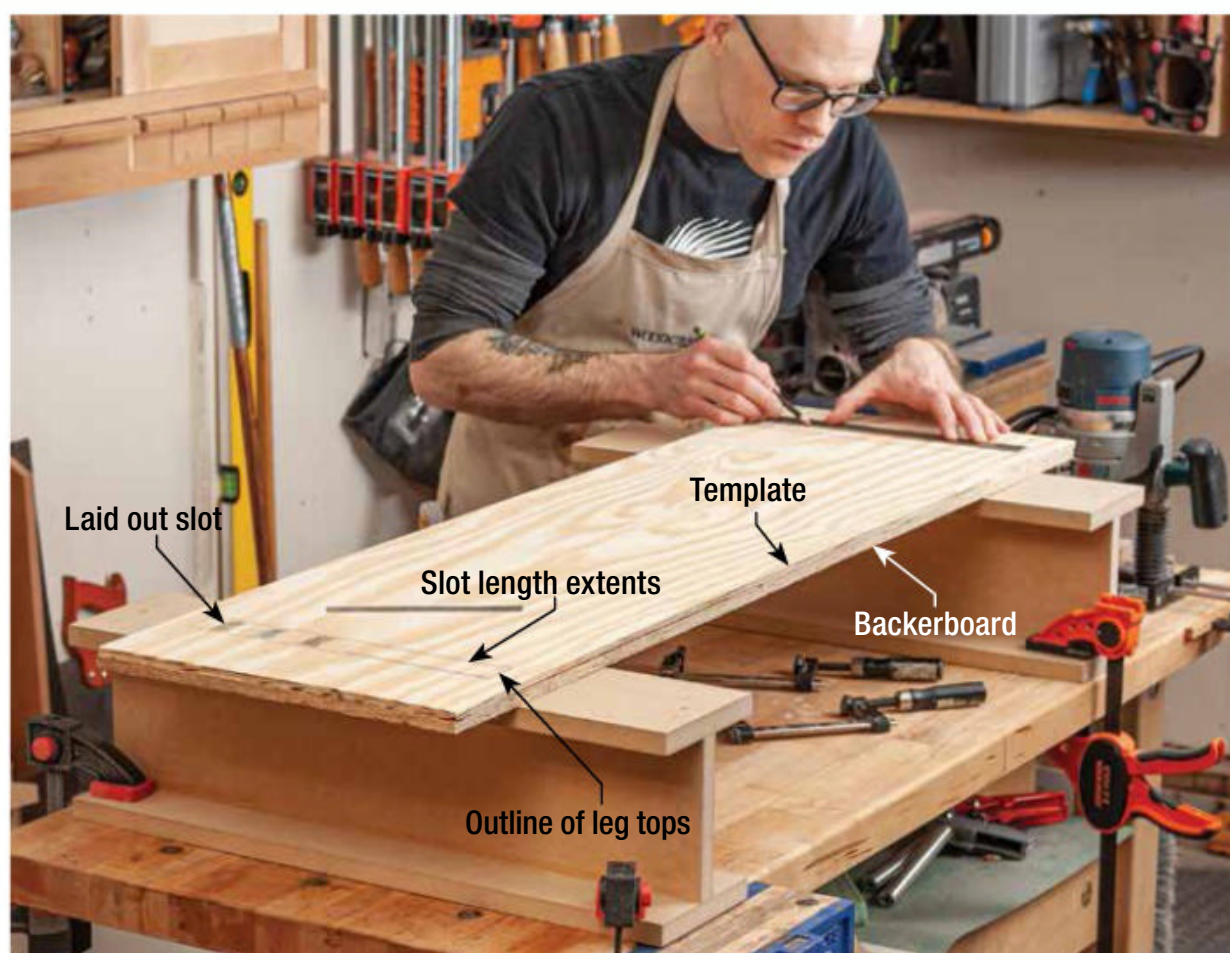
Assemble the base. Orient the workpieces upside-down for easier assembly. Apply glue to the notches and along the mating edges of the legs. Using the wedge-shaped offcuts from tapering as cauls, clamp the leg parts around the stretcher. Double-check the assembly for square.

Routing the mortises using a template

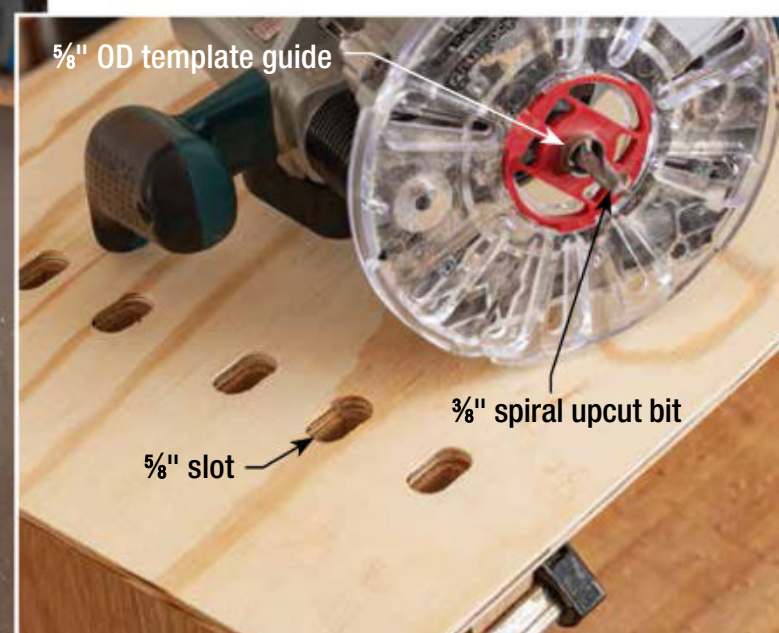
To rout the mortises, first make a template from a sheet of $\frac{1}{4}$ "-thick plywood, 14" by 48". Invert and center the base on the template. Trace the tops of the legs onto the template, and label the base and template for orientation later. Take time to label the seat slats, too. Remove the base and lay out the slots as shown.

Clamp the template and a backerboard of the same size to your bench, and set a router edge guide to align a $\frac{5}{8}$ " straight bit with the outermost slot location. Plunge the bit through the template at one end of the slot and rout it in one pass. Set and reset the edge guide to rout the remaining slots using the same process. Mount the template to the base and rout its mortises as shown.

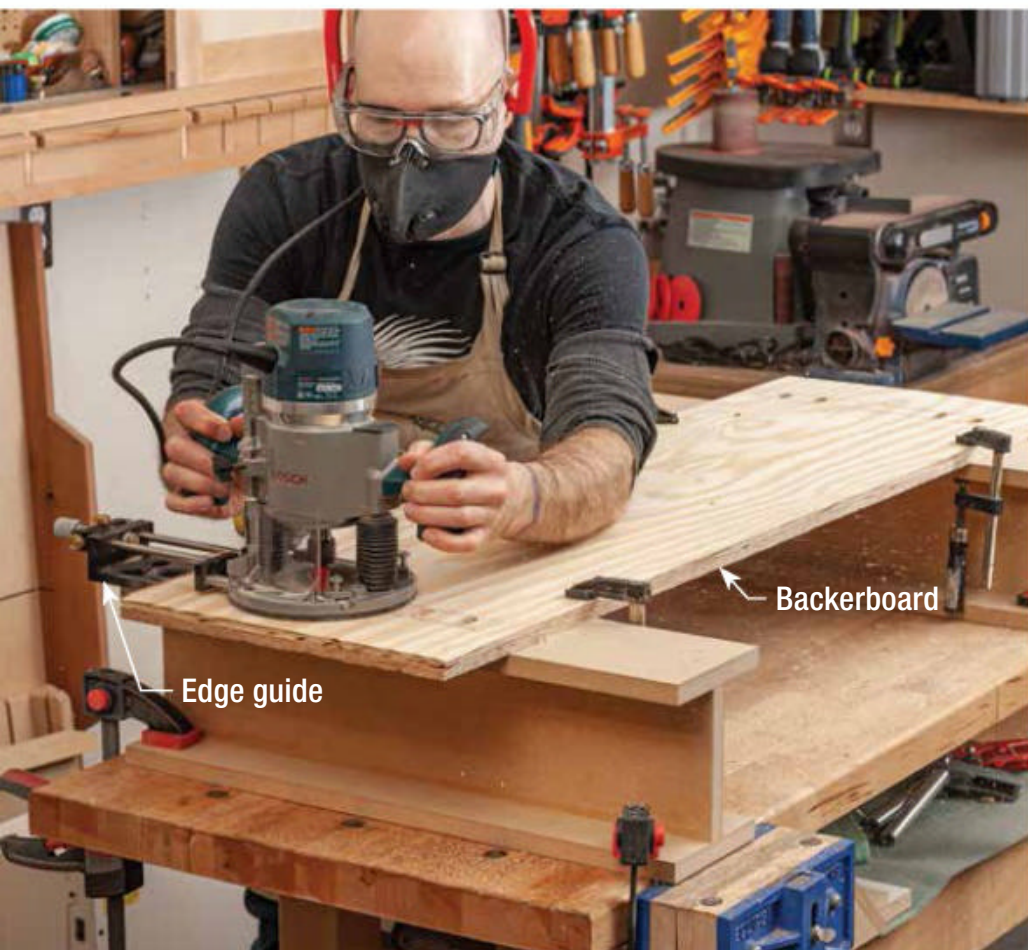
Clamp the seat slats together with a spacer in between. Flip the template face for face and clamp it to the slats aligning it in the same orientation you marked earlier and rout the mortises.



Lay out the template. After tracing the tops of the legs on the face of the template, lay out one set of mortise slots at one end of the template. Then mark the length extents for the remaining mortise locations.



Mortise the base. Equip your router with a guide bushing and a spiral upcut bit with a $1\frac{1}{4}$ " cut length. Insert the bushing into the template slot and plunge the bit to full depth at each mortise end before routing the rest in successively deeper passes.



Rout the template. Set your router's edge guide and rout all four outermost slots. Reset the guide to rout the center set of slots and repeat for the inner slots. I-beam risers elevate the work and provide clamping options.



Mount the template. Invert the base and realign the tops of the legs with their traced outlines. Place cleats against the outer faces of the legs and screw them to the template. Clamp the cleats to the legs before flipping the assembly over.



Mortise the slats. With the slats face down, clamp them together with a spacer inbetween. Remove the cleats and use the inverted template to rout the slat's mortises in the same manner as the base.

Make Loose Tenons

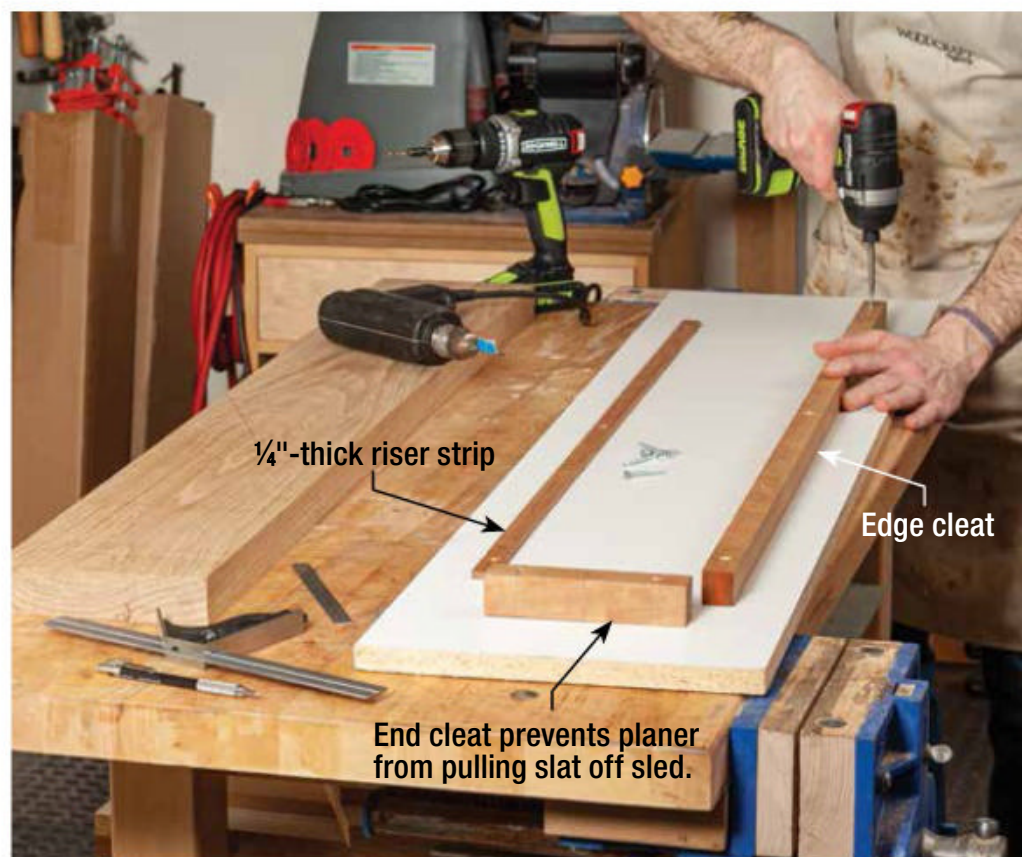
Make loose tenons from the same stock as your bench parts. First, mill a strip slightly narrower than the mortise length and long enough to yield all your tenons. I got the thickness close with my planer and then fine-tuned it using my #4 bench plane to create a snug fit that didn't require force. Then round over all four edges using a $\frac{3}{16}$ " roundover bit at the router table. Crosscut the tenons to length at the table saw using a miter gauge, with a stop block set against the fence forward of the blade to prevent kickback.

Tapering the seat slats, and assembly

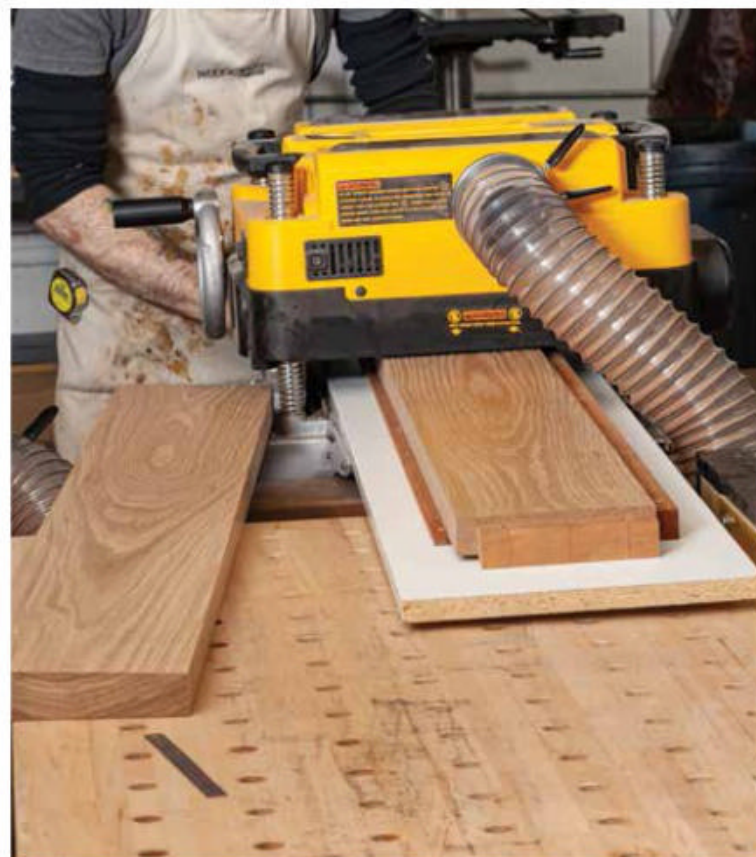
After making and fitting your loose tenons, dry-fit the slats and base to check for square and ensure the joints close tightly. When satisfied, ready the slats for beveling. Make a jig for your planer using dead flat sheet stock a few inches wider and longer than your slats. Use cleats to hold your slats in place and add a ¼"-thick riser strip to raise their inside edges for beveling. Bevel the slats as shown.

Sand the slats and base through 220 grit, and break

the corners of the slats for comfort. To assemble the bench, glue the tenons in their leg mortises before lowering the slats into place and tapping them home. Apply your outdoor finish of choice. I used Vermont Natural Coatings for a clear finish that's waterproof and environmentally friendly. Finally, screw on the UHMW feet, and have a seat to appreciate your handiwork while enjoying the great outdoors.



Make the bevel jig. Use a seat slat to position the cleats and riser strip. Once in place, mark their location and drill the necessary pilot and clearance holes and countersinks before screwing the cleats and strip in place as shown.



Bevel the slats. Set a slat on the jig, registering it against the cleat and stop and making sure the inside edge rests on the riser. Run one slat at a time through the planer, taking small bites until you reach the full depth of the bevel.



Assemble the bench. Brush glue on the inside walls of the mortises and on the faces and edges of the tenons. Tap the tenons into the leg mortises before lowering one slat at a time onto the assembly. Use a mallet and wood pad to fully seat the joints. ■

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Ball-AND-Cup GAME

A turned toy that's curiously addicting

By Derek Richmond

With two kids of my own, and a handful of nieces and nephews of all ages making frequent appearances at the house, I take care to keep a few simple games and toys about to entertain them. I recently added this ball-and-cup game to my collection. The kids enjoy it as do their parents. In addition to all the fun you'll have playing with it, I think you'll find making the game teaches a few useful skills along the way.

Shaping and drilling the cup is a simple process—and you can alter the dimensions to fit just about any hand. Turning the sphere might seem tricky, but a simple shop-made gauge makes it easy and repeatable, so you can make everyone on your list a game of their own. And sphere-turning is a good skill to master for any turner. In fact, the toughest part of this addicting game is actually catching the ball in the cup. But trying to master that skill keeps the kids, cousins, and other kin entertained for hours. Meaning I can slip away to my shop and some other turning projects!

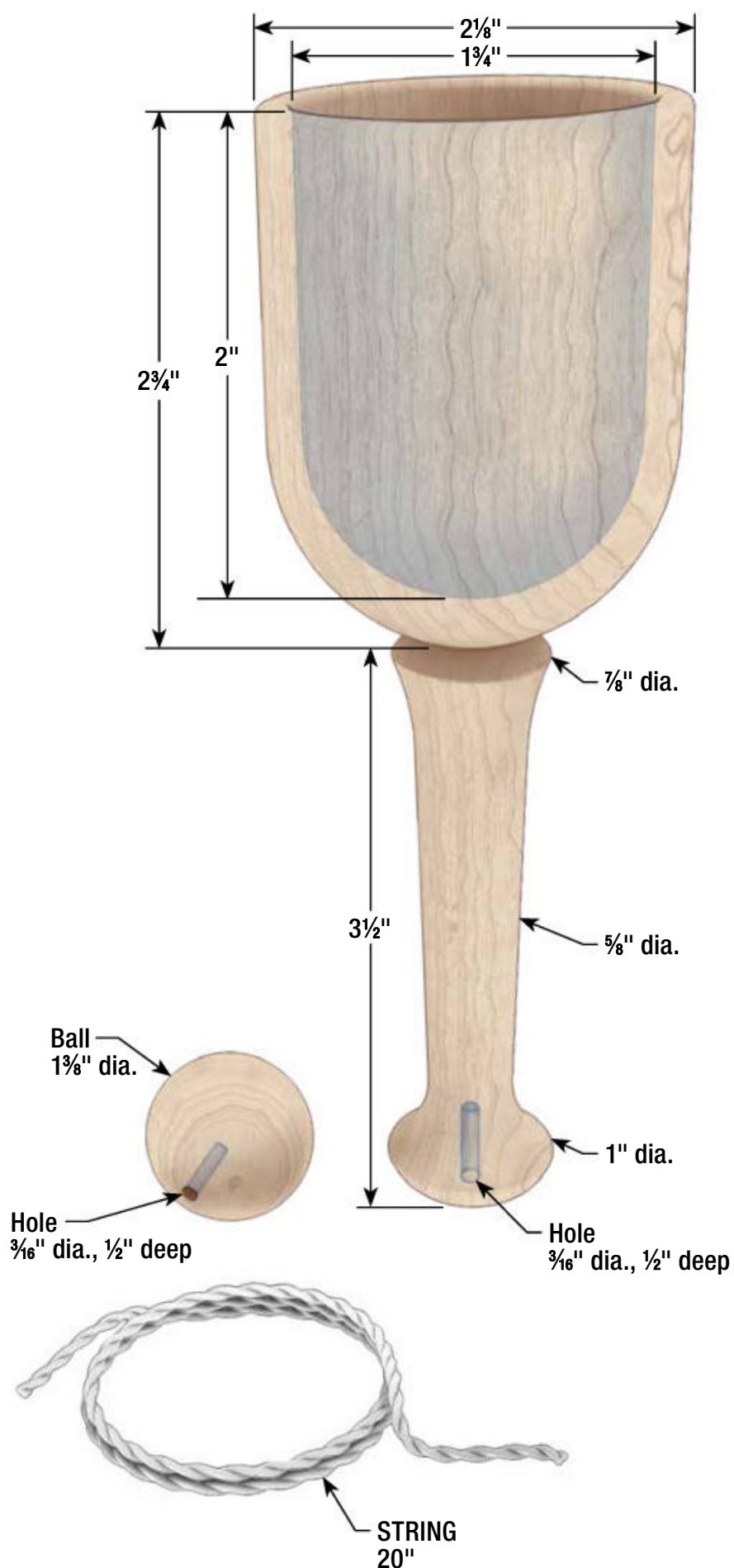


Order of Work

- Turn tenon between centers
- Rough out handle
- Drill out cup
- Finish and part off cup and handle
- Turn and finish sphere
- Attach parts with string

Turning round and round

Both the cup and ball are turned from the same hardwood blank. Turn the cup first, from the portion of the blank nearest the tailstock. Drill out the cup with a series of Forstner bits, starting small and working up because you'll be drilling into end grain. After shaping the cup and handle, part them off. Then turn the ball from the remaining stock, using a simple gauge to check for sphericalness.



Rough-turn the shape

Mount a 3 × 3 × 9" blank between centers and rough it round. I use maple or ash, but any hardwood will do. If you want to make multiples, I've found that a baseball bat blank will produce four full ball-and-cup games, meaning all the kids (or adults) get matching games. Turn a tenon at one end, sized to fit your scroll chuck, and remount the blank.



Roughing it. With the blank mounted between centers, use a roughing gouge to turn a cylinder at least 2 1/4" in diameter.



Turn the tenon. After rounding the blank, use a parting tool to create a 3/8" long tenon sized to fit your scroll chuck on one end. The tenon end becomes the blank for the ball, while the tailstock end becomes the cup.

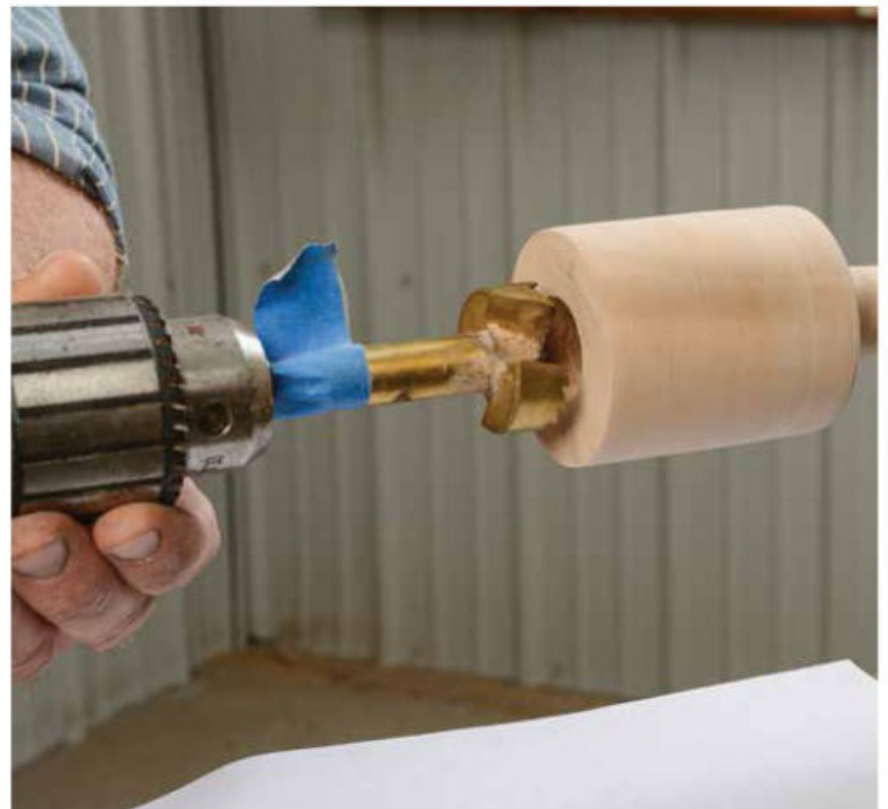
Turn the toy and hollow the cup

With the blank mounted in your scroll chuck, lay out the lengths of the cup and its handle. Rough out the cup and handle shape, before drilling the cup's interior. Note, if you regularly drill into endgrain, using carbide-tipped Forstner bits makes this task easier. After cleaning up

and rounding the inside of the cup, finish shaping the outside. Stabilize the workpiece with a conical live center as you finish the shaping. Sand, finish, and saw off the toy, leaving material in the scroll chuck for the bowl.



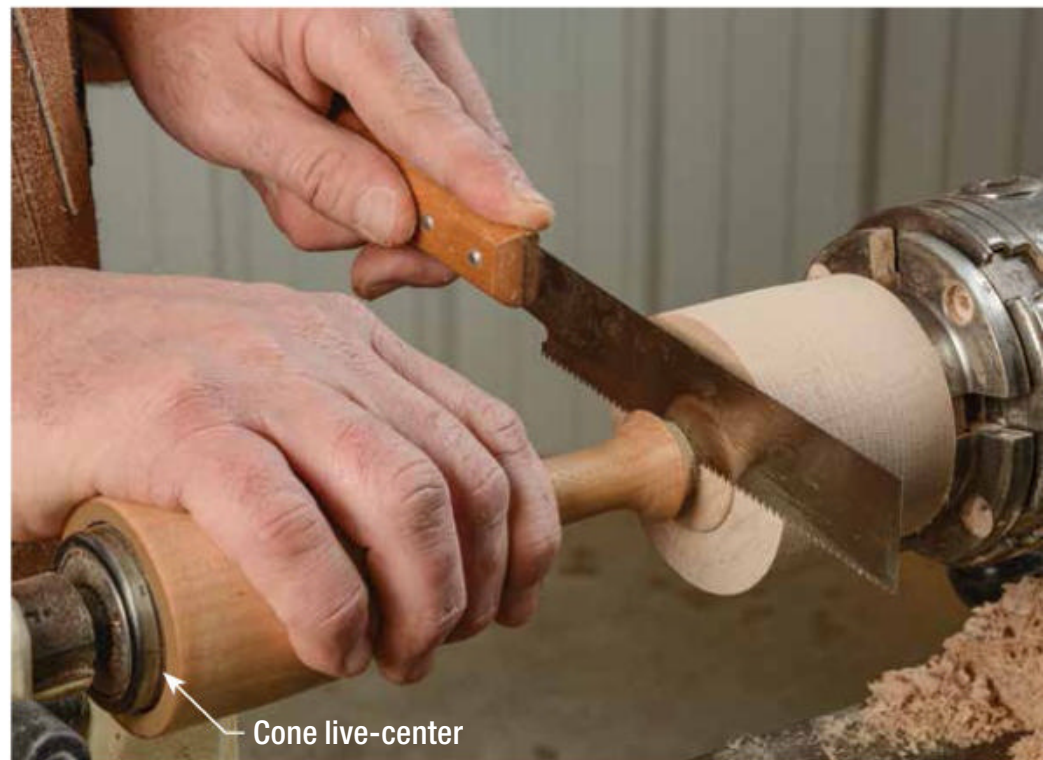
Rough the shape. Use a parting tool to make notches near the top and bottom of the handle, leaving the blank 1" in diameter at these points. Then turn away the waste in between with a spindle gouge.



Drill the hole. Swap the live center in the tailstock for a Jacobs chuck and drill the cup's interior using a series of successively larger diameter Forstner bits. Wrap masking tape around the bits' shanks about 1½" from the end to indicate the drilling depth.



Round the bottom. Refine the inside of the cup with a gouge or round nose scraper, rounding the bottom and removing marks left by the Forstner bits. Use a light touch to avoid catches on the thin walls of the cup.

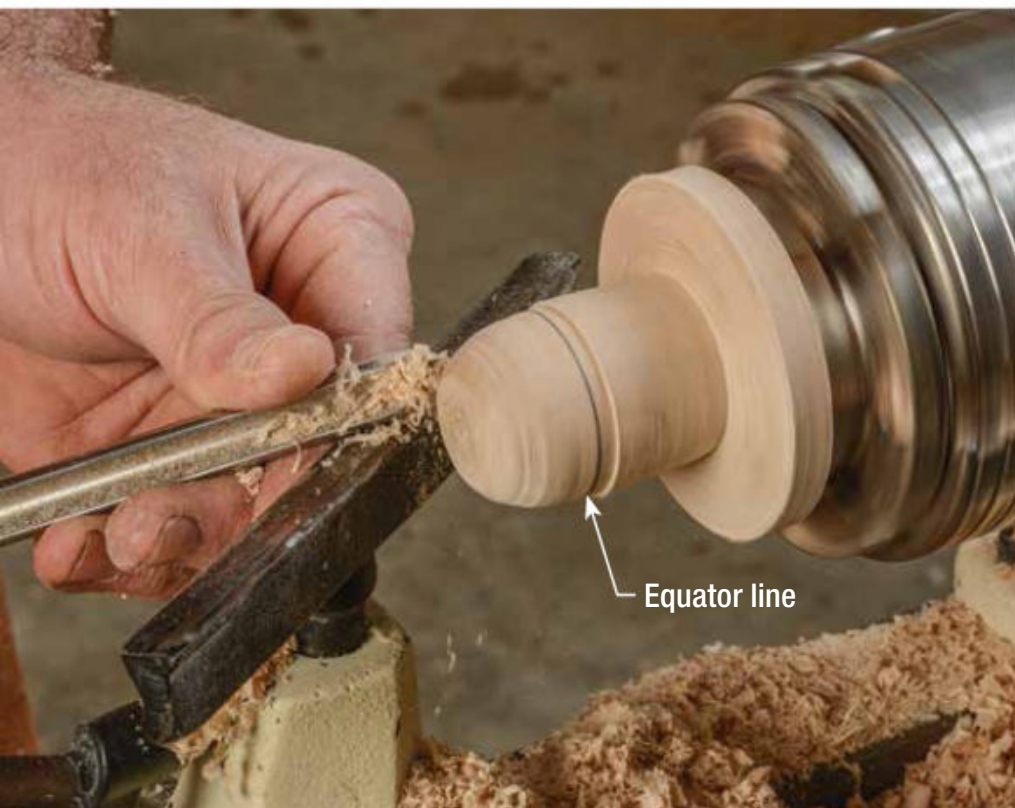


Sawing the toy free. After you finalize the profile of the cup and handle, sand and finish both inside and out. Then remove the cup and handle by parting to a small tenon and finishing the cut with a handsaw.

Make the ball, assemble, and have fun

Turn the remaining blank to a 1½" diameter cylinder, then clean up the end. Turn the ball as shown, checking for sphericalness often. After turning the ball, hold it securely in a clamp and use your drill press to bore a 3/16" diameter hole partway through the ball. Drill the same-size hole

in the bottom of the cup handle. Connect the parts by gluing one end of a 20" length of string into each hole. A longer string or a smaller ball will make the game easier.



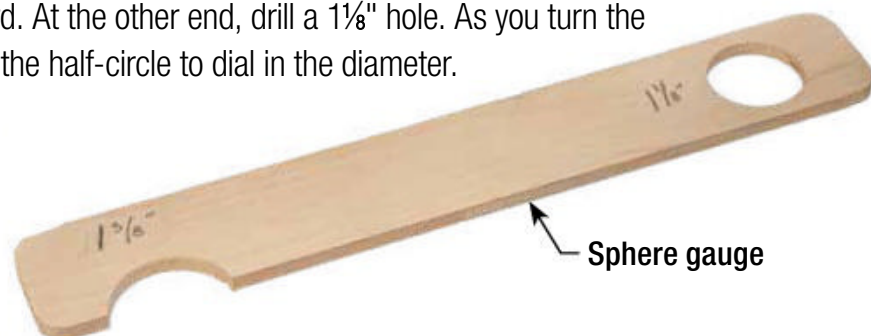
Turn the outer half. Turn about 1" of the blank to 1⅜" in diameter. Mark an equator 1⅛" from the end of the cylinder. Then carefully turn the front end of the sphere with a spindle gouge, starting by removing just the corner then slowly working just up to the line.



Check for roundness. To make the sphere gauge, use a 1⅜" Forstner bit to cut a half-circle near one end of a length of a scrap of ¼" plywood or hardboard. At the other end, drill a 1⅛" hole. As you turn the sphere use the half-circle to dial in the diameter.



Cut the back half. Mark the back end of the sphere, 1⅛" behind the equator. Part a tenon behind that mark to make clearance for your gouge. Then turn the back half of the sphere, working from the original equator to the tenon. Sand and finish the ball before parting or sawing it off the tenon. Touch up the parting spot with sandpaper and finish.



Check for high spots. As you turn the sphere, use the smaller hole in the sphere gauge to reveal any high spots. ■



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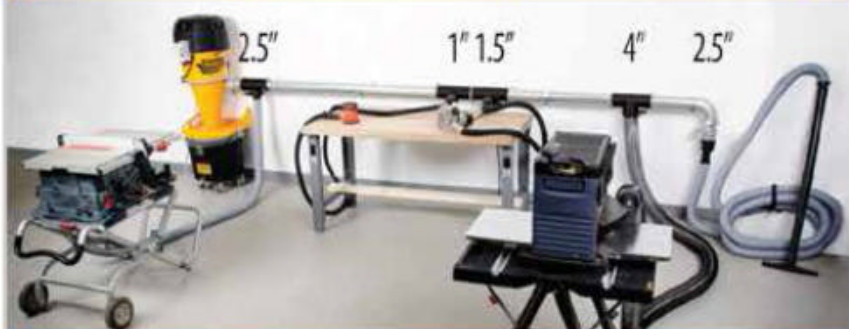
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SASSAFRAS

A handsome, yet unpretentious species with a lot to offer

By Ken Burton

While sassafras may not have the panache of quartersawn white oak or the rich color of black walnut, the humble wood is still worthy of consideration. It's relatively lightweight and straight-grained, and it holds up well outdoors. The wood is also easy to work, stable, and inexpensive compared to its flashier competition. What's not to like? As a bonus, sassafras, also known as cinnamon wood, gives off a distinctive spicy but pleasant aroma

when cut or sanded. Its coarse grain structure is similar to ash and chestnut. It ranges in color from an olive golden-brown to a darker reddish-brown with lighter sapwood.

Where the wood comes from

Sassafras (*Sassafras albidum*) is native to the eastern United States. While the trees can reach significant size—up to 100' tall and 4' in diameter in parts of the south—throughout much of their range they tend to be scrubby hedge-row trees. Thus sassafras lumber tends to be narrower and shorter than many other species. Most boards range from 4 to 9" wide and 8-12' long. It is generally available in 4/4 and 8/4 thicknesses for under \$5 a board foot. The trick is actually finding a dealer that stocks it. While far from rare or endangered (the species is not listed on either the CITES or IUCN Red List), there simply isn't that much demand for sassafras, so not many lumber yards carry it. Sassafras

veneer is occasionally available online, and sassafras plywood is even rarer.

History in woodworking

Sassafras has a storied history, but not so much for its wood. In colonial times, the bark and roots of sassafras were boiled to extract their "medicinal" qualities. The benefits were believed to cure everything from headaches and rheumatism to diarrhea and syphilis. But before you rush to brew up your own cure-all cocktail, realize that sassafras does none of these things, nor will it make you taller or better looking. These dubious claims, however, caused sassafras to be a leading export back to Europe for several years. Such lore also led the wood to be a popular choice for bed frames as it was believed its aroma would keep away bedbugs and other nocturnal critters. More legitimate uses included barrels for dry goods, gates and fencing, and small boats. Today, antique restorers seek it out as a chestnut substitute. In fact, a lot of



Supporting role. Sassafras is a good choice for projects where the wood doesn't have to be the star of the show. It's handsome without craving attention.



TEXTURE
MEDIUM



TOXICITY
LOW-MEDIUM



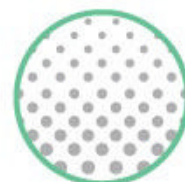
ROT/INSECT RESISTANCE
MEDIUM-HIGH



STABILITY
HIGH



HARDNESS
MEDIUM



DENSITY
31 LBS./CU. FT.



Not well known, but vaguely familiar. Sassafras's grain and coloring are similar to several other species, especially ash (right). If in doubt about what you're purchasing, scratch and sniff. Sassafras has a distinctive spicy odor.

sassafras is exported to Europe for just such purposes.

Working and finishing

Sassafras is delightful to work with. It is soft enough to cut easily with hand tools, and it machines well. However, the wood is slightly brittle and prone to splintering and tearout, so pay close attention to grain direction when surfacing. It holds fasteners well, but be sure to predrill to avoid splitting. The wood stains and finishes readily and requires no special preparation for glue. As for bending, the jury is still out. I haven't tried it myself but my research yielded several sources that say it bends well, and several that say it doesn't. When I get a chance to try bending some, we'll post an update.



Sassafras

- Cabinetry
- Furniture
- Outdoor projects
- Turnings
- Chestnut substitute in restorations



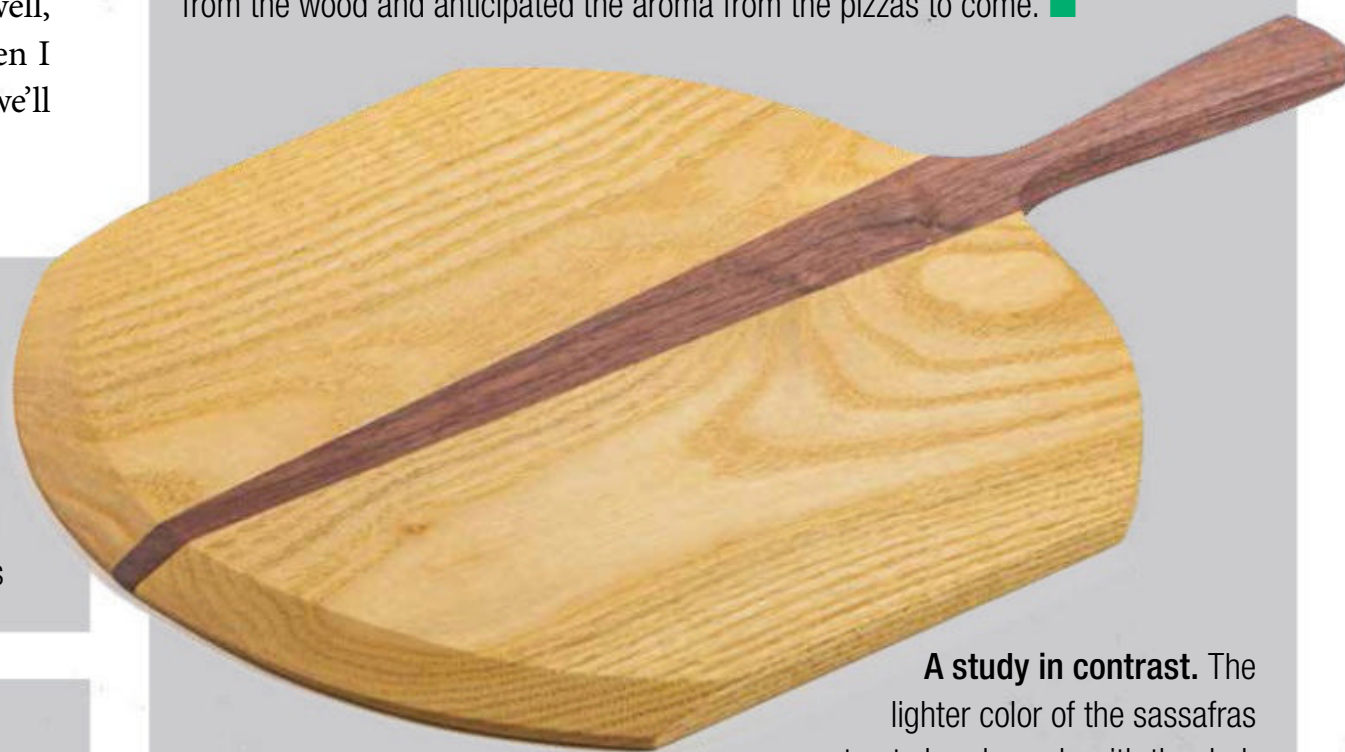
onlineEXTRA

- Magic Coin Bank (Dec/Jan 2012)
- White Ash (Aug/Sept 2021)

Sassafras revisited

I am always amazed at the power of smell to trigger memories. The last time I used sassafras was over ten years ago when I made the magic coin bank (facing page). But as soon as I made my first cut for the pizza peel (shown below) it seemed like I had just finished with the bank yesterday. Working with sassafras again made me wonder why I don't use it more often. It truly is a pleasure to work.

Making the peel was straightforward. After milling the stock to thickness, I edge-glued the two sassafras blanks to the tapered walnut handle, orienting the grain in all three boards to run towards the curved end on the top side. Once the glue had dried, I hand-planed the surfaces rather than sand them. For kitchenware such as this, I find leaving a cut surface rather than a sanded one results in less raised grain to deal with after washing. I beveled the front edge with a spokeshave, again opting for a faceted profile rather than one sanded smooth. As I worked, I enjoyed the aroma from the wood and anticipated the aroma from the pizzas to come. ■

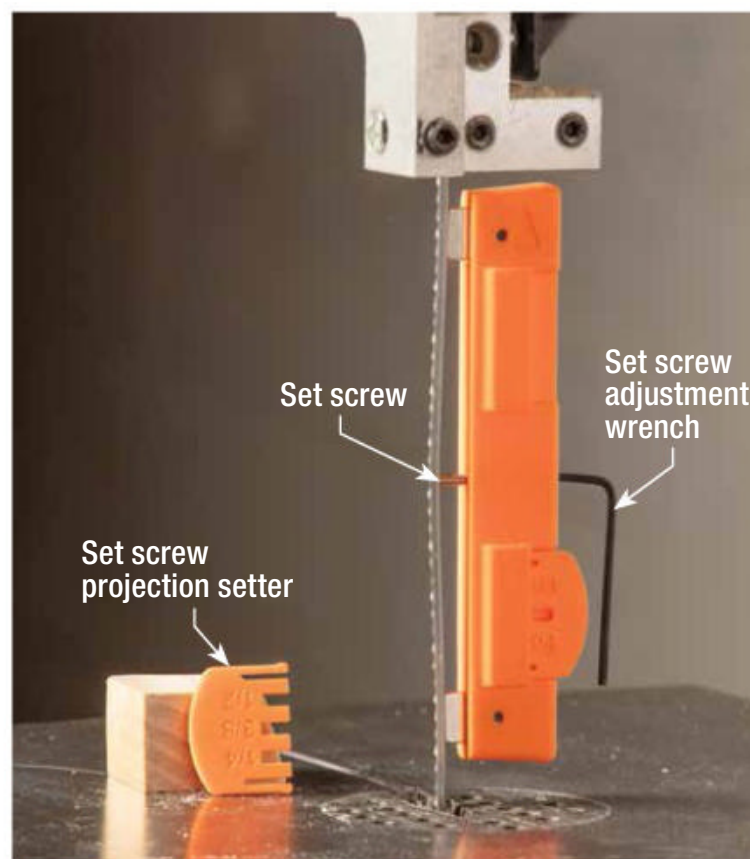


A study in contrast. The lighter color of the sassafras contrasts handsomely with the dark rich walnut. A coat of mineral oil brings out the colors in both woods nicely.

Easier bandsaw tensioning

The bandsaw is one of my favorite machines in the shop, but swapping out blades of different sizes and retensioning them can slow my workflow. The built-in tension guides on most machines are notoriously inaccurate, and traditional third-party bandsaw tension gauges can cost hundreds of dollars. So when I heard about Mark Juliana's EZtension gauge, I was pretty excited. The tool attaches to your un-tensioned blade using two rare earth magnets. A set screw in the middle of the tool, which you adjust based on the blade's width, deflects the blade (as shown). As you slowly increase tension, one of the magnets pops off the blade when the proper tension is reached. The tool doesn't give you an exact numerical measurement; it just tells you when the tension hits 15,000 PSI, the proper tension for most bandsaw blades on the market. And it should be noted that the EZtension gauge only works on carbon steel blades, as bi-metal blades have differing magnetic properties. But this tool is so simple, quick, and well-engineered, I can no longer imagine my shop without it.

—Sarah Marriage



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Read this issue closely to answer the following questions.

1. How does Derek Richmond split logs for his camp stool?
2. According to Kimberly Winkle how long can you store milk paint in the fridge?
3. What ailments were Sassafras thought to cure in colonial times?

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Knobs and pulls made easy

I used to approach hardware day with trepidation. One tiny miscalculation or slip of the drill and all those hours spent on a cabinet job could be wasted. Then I tried out True Position's Cabinet Hardware Jig. Hardware day quickly became less stressful and a little more fun. The U.S.-made tool features precisely machined and marked rulers, stops, and drill guides that make drilling holes for cabinet hardware a snap. I have their mid-range model that accommodates pulls with bolt spacing up to 12". To use the jig, simply set the hole spacing using the pull to be installed, and set the placement with the included fence and stops. Then hold the jig in place and drill the holes. It's fast and repeatable, just what you want when installing a kitchen's worth of pulls. The molded case is also well-made, with snap-in places for all the parts and drill bits, plus room for optional accessories. If you spend much time installing cabinet hardware, you'll appreciate this tool. ■

—Ken Burton



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Buyer's Guide

Tool Reviews (p. 12)

1. King Industrial 8 × 13" Variable Speed Lathe kingcanada.com, **\$315.00**

Camp Stool (p. 22)

1. Peavey woodworker's shingle froe #147901, **\$71.99**
2. Lynx Concave Cabinet Scraper Set, 2 pc. #150104, **\$18.99**

Following items available from tandyleather.com

3. Tri-bolt with washer, antique brass 1189-02, **\$12.99**
4. Crazy horse water buffalo bend, brown 9287-02, **\$109.99**
5. Waxed polyester thread, brown 1206-02, **\$3.99**
6. Stitching needles, 10 pk. 1195-00, **\$2.99**
7. Craftool Pro Line 4 prong stitching chisel, 1/8" spacing 88045-04, **\$9.99**

Milk Paint (p. 26)

1. Old Fashioned Milk Paint, Federal Blue, Water-Based, pt. #811152, **\$16.99**
2. Old Fashioned Milk Paint, Marigold Yellow, Water-Based, pt. #811625, **\$16.99**
3. Old Fashioned Milk Paint, Salem Red, Water-Based, pt. #811180, **\$16.99**
4. Old Fashioned Milk Paint, Crackle Finish, Water-Based, pt. #811156, **\$23.99**
5. Old Fashioned Milk Paint, Extra-Bond, Water-Based, pt. #813376, **\$16.99**

Other colors available at woodcraft.com

6. Real Milk Paint, various colors, qt. realmilkpaint.com, **\$18.99**

Round Jewelry Box (p. 32)

1. TransTint Bright Green Alcohol/Water Soluble Dye, 2 oz. #128491, **\$23.99**
2. Old Fashioned Milk Paint, Bayberry, Water-Based, pt. #811181, **\$16.99**

3. Old Fashioned Milk Paint, Marigold Yellow, Water-Based, pt. #811625, **\$16.99**
4. CMT Slot Cutter with Arbor and Bearing, 1 7/8" D, 1/8" H, 1/4" SH #822290, **\$33.45**
5. Whiteside 60-degree Chamfer Bit, 1" CL, 1/2" SH #158805, **\$101.99**
6. Pony 10-ft. Canvas Band Clamp lowes.com, #4131486, **\$39.98**
7. Bronze Sleeve Bearing for 5/16" Shaft Diameter,
1" length mcmaster.com #6381K102, **\$3.32**
8. Miller Mini-X Dowels, 100 ct. millerdowel.com, **\$17.99**
9. Miller Mini-X TruFit Drill Bit millerdowel.com, **\$20.99**

Outdoor Bench (p. 40)

1. Freud Double Flute Straight Bit, 5/8" D, 1" CL, 1/2" SH #834233, **\$25.97**
2. Freud Upcut Spiral Bit, 3/8" D, 1 1/4" CL, 1/2" SH #828779, **\$53.97**
3. WoodRiver 5/8" OD Template Guide Bushing #144692, **\$9.99**
4. Titebond III Waterproof Glue, 16 oz. #145562, **\$9.99**
5. Low Silhouette Toggle Clamp, 2 1/4" × 7/32" (2 needed) #143938, **\$16.99**
6. Piedmont Plastics UHMW Sheet, 1/8" Thick #124225, **\$14.99**
7. Power Pro Bronze Exterior Screws, #6 × 1" lowes.com, #875071, **\$3.48**
8. Vermont Natural Coatings Penetrating Water Proofer,
1 qt. vermontnaturalcoatings.com, **\$22.50**

Ball-and-Cup Game (p. 48)

1. Twine by Celebrate It, 100 yd. michaels.com, #10480318, **\$6.49**

Great Gear (p. 56)

1. EZtension Bandsaw Tensioning Gauge eztension.com, **\$39.95**
2. True Position Original Cabinet Hardware Jig truepositiontools.com, #TP-1934, **\$199.00**

Items above available at Woodcraft stores, at woodcraft.com, or by calling (800) 225-1153, unless otherwise noted. Prices subject to change without notice.



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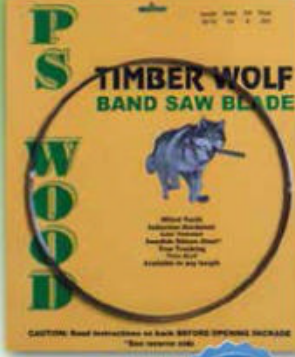
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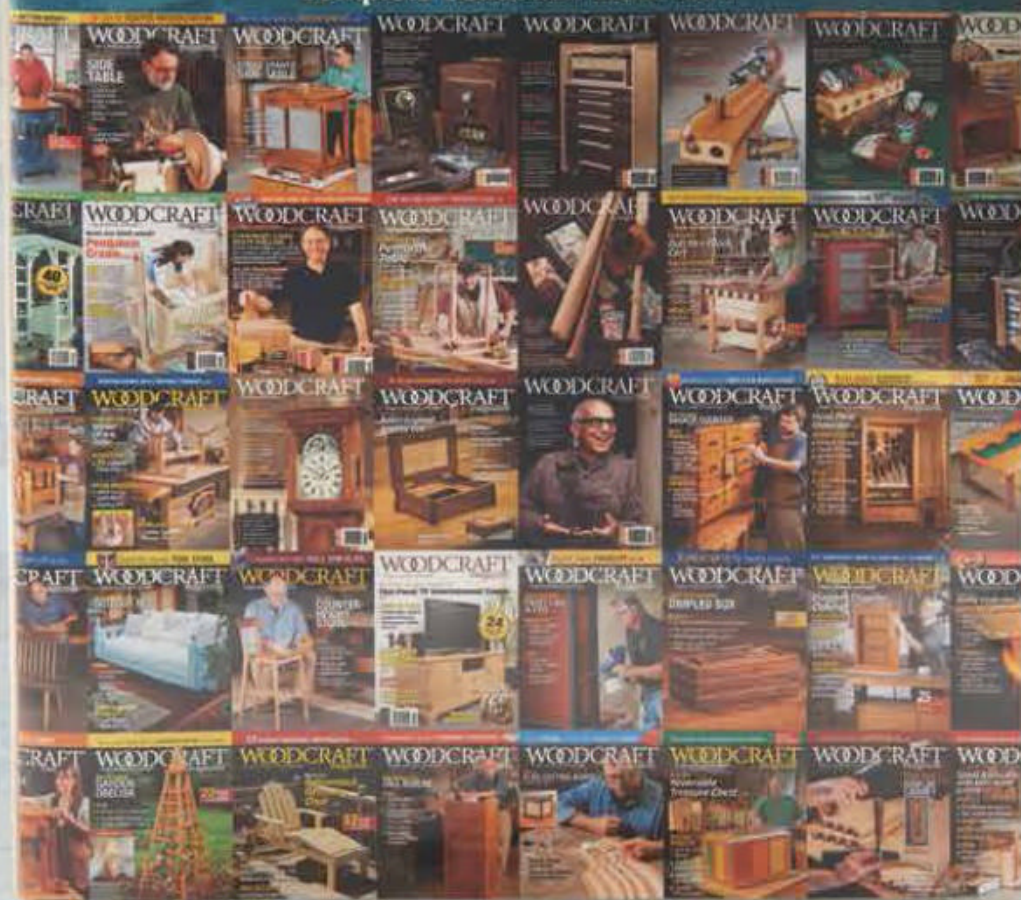
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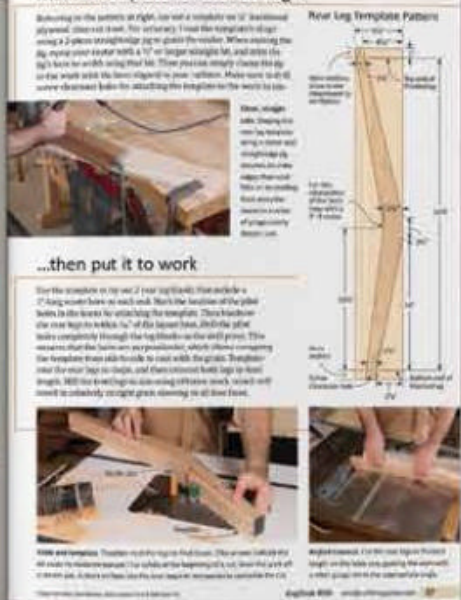
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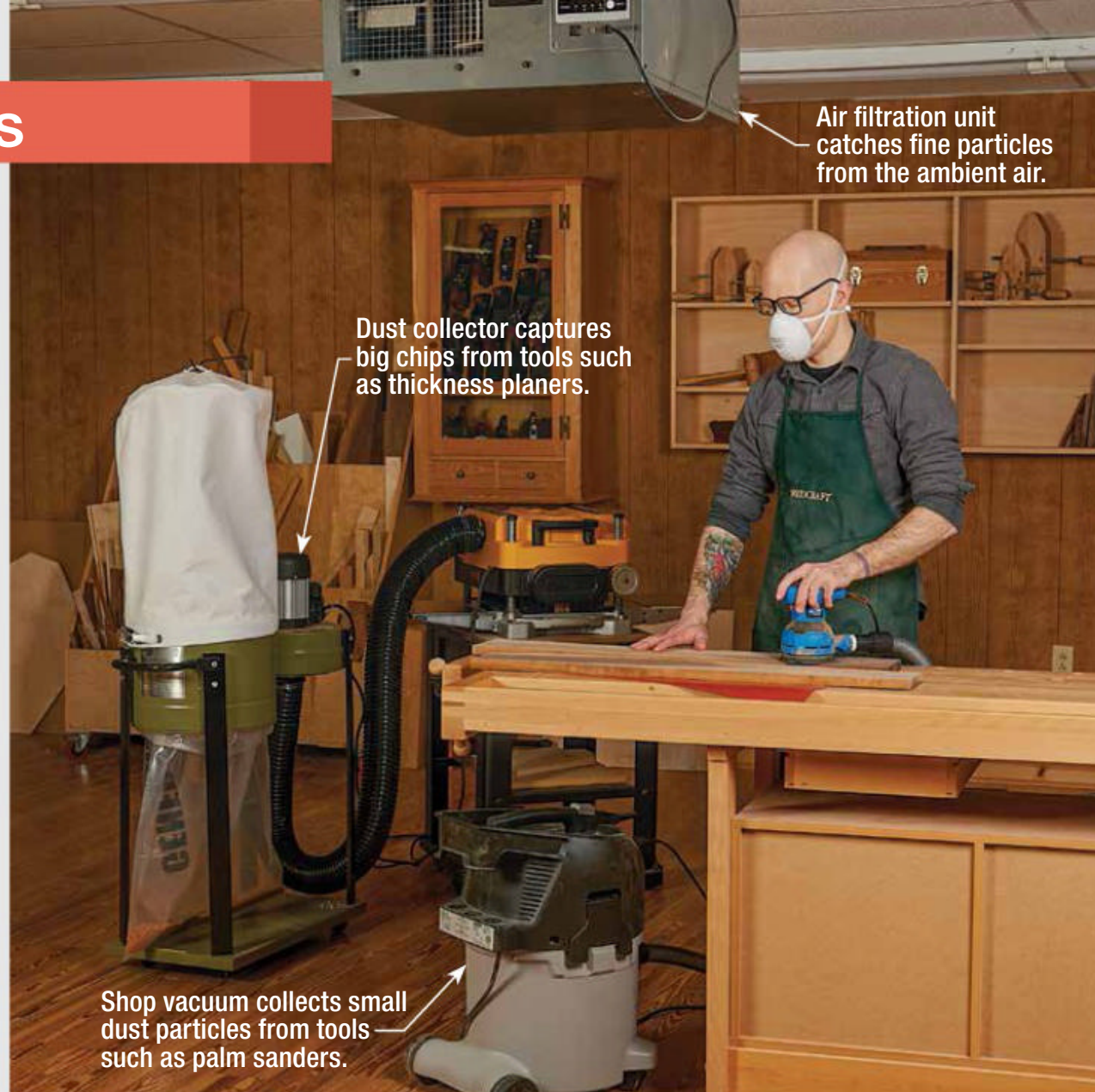


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A complete dust collection system?

Q: *I've been woodworking for a few years, but I'm finally starting to put together a full shop. Do I need a complete dust collection system, or will my trusty shop-vac be enough?*

Judah McVey
Columbus, OH



A: The truth is that you need a more complete system. because there are really three components to maintaining a clean, healthy shop. Your shop vacuum's portability and relatively large waste container will get you by for a while. But you'll soon run into poor-performing machines one way or another. That goes for the shop-vac and any stationary power tools you may have hooked it up to. For example, a planer's motor could burn up if you don't clear out the chips routinely. It comes down to what each machine is designed to do. Shop vacuums have higher static pressure and low CFM (Cubic Feet per Minute), the amount of air per minute that can be moved from a space. Shop-vacs are designed to move tiny dust particles through small hoses. That makes them perfect for general shop clean-up and attaching to your small power tools such as random orbit sanders, biscuit joiners, miter saws—just about anything that comes with a dust bag. But a shop-vac won't do a good job removing big shavings and chips. That's where dust collectors come in.

Dust collectors have low static pressure and high CFM,

making them efficient at moving large materials through big openings over long distances. A dust collector with its low pressure won't do well with small dust particle producers like random orbit sanders. But they're perfect for stationary power tools that produce big chips, such as jointers, planers, and table saws. The good news is even if you don't have the room or the budget for a big stationary dust collector with dedicated ductwork throughout the shop, a portable dust collector for under \$400 will serve you well. And since most home shops don't typically run more than one big machine at a time, you can move the hose from one tool to another as needed.

The final component of good dust control is cleaning the ambient air. For this you'll need an air filtration unit. So keep the shop-vac for shop clean-up and small hand power tools. Pick up a dust collector to handle the big chips from stationary machines. And add a filter to scrub the air. Between all that and a good dust mask, you'll have made great strides towards creating a clean, safe workspace. ■



Peter Collins
Professional woodworker
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